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February 1954

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Food Patterns in the Caroline and Marshall Islands

37th A.D.A. Annual Meeting, Philadelphia October 26–29, 1954

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Revisions of the Recommended Dietary Allowances[1]

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FROM the earliest days of civilization man has been interested in his food, not only from the standpoint of mere survival or the satisfactions to be derived from eating but also in a desire to achieve a full measure of health and vigor through proper diet. Thus, pronouncements and opinions concerning foods to be eaten or to be avoided for purposes of health have come in a never-ending flow from the prophets, the sages, and the elders of all ages. However, it has only been in recent decades that the fund of information has been sufficient to permit a scientific approximation of the nutritive needs of man.

With this information available, it is possible to plan the diets of individuals or of groups so that food intakes will be compatible with health—or, with knowledge of the type and quantity of food ingested, to determine the apparent adequacy or inadequacy of a diet. These are the objectives and endeavors of the new science of nutrition. It now engages the efforts of a large group of highly specialized personnel —dietitians, nutritionists, and physicians—who are concerned with planning for the consumption of adequate diets by individuals and groups in homes and institutions. From this source also must come the information which will guide the leaders of agricultural and other policies in states and in nations.

For these purposes the desirability was recognized of a dietary standard or guide which could be utilized broadly in planning diets which would meet the needs of health. In the United States such a guide was provided by the Food and Nutrition Board of the National Research Council, with publication of its first tables in 1943 (1). The approach utilized was to assemble nutrition authorities who were to review carefully the currently available information concerning the nutrients demonstrated to be required in the human diet and to determine insofar as possible the quantities needed to promote and to preserve health. Early in the deliberations it was agreed that the quantities of the essential nutrients to be recommended for daily consumption should be greater than the minima required to prevent manifestations of nutritional deficiencies. Therefore, it was planned to establish levels of intake designed for the *maintenance of good nutrition of healthy persons* in the United States under existing conditions. These values were to be considered desirable goals toward which to strive in planning diets and food supplies. However, the "Allowances" were not proposed as optimal levels of intake, since it was apparent that the current state of our knowledge did not permit description of optimal nutrition in relation to most, if not all, essential nutrients. It was recognized that the values recorded as levels of daily dietary intake should be considered tentative or approximate and subject to frequent revision as new knowledge accumulated. To avoid any implication of finality or of minimal or optimal requirement, the term "dietary standard" was purposely and carefully avoided and the values have become known as *Recommended Dietary Allowances*.

These Allowances have come into broad use in planning food supplies for population groups and are familiar to most workers in the field of human nutrition. In accordance with the original plan and policy, revisions have been made, the first in 1945 (2), a second in 1948 (3), and a third which has been approved by the Board and is soon to be published.

The 1953 revision of Recommended Dietary Allowances (4) (Table 1) includes a number of important changes. However, the basic principles on which the Allowances were formulated have been retained and reaffirmed. It should be clearly understood that the levels of nutrient intake recommended are those which, in the judgment of the Board, are desirable goals toward which to strive in planning diets and food supplies. They should not be interpreted as "requirements since they represent not merely minimal needs of average persons but levels sufficiently high to cover individual variations in a substantial majority of the population. The values for each

[1] Presented at the 36th Annual Meeting of The American Dietetic Association in Los Angeles, on August 28, 1953.

nutrient include a margin of safety above the minimal level which will prevent deficiency, in order to provide for increased needs in times of stress and to permit other potential benefits. Although the optimal intake of essential dietary constituents remains largely speculative, there is considerable evidence that improvement in growth and function occurs when the intake of certain nutrients is increased above the level just sufficient to prevent signs of deficiency disease. The nutrient intakes recommended are, in general, higher than the average requirements of healthy individuals and lower than the

TABLE 1

FOOD AND NUTRITION BOARD, NATIONAL RESEARCH COUNCIL RECOMMENDED DAILY DIETARY ALLOWANCES,* REVISED 1953

Designed for the maintenance of good nutrition of healthy persons in the U. S. A.

(Allowances are considered to apply to persons normally vigorous and living in temperate climate.)

AGE AND SEX	WEIGHT	HEIGHT	CALORIES	PROTEIN	CALCIUM	IRON	VITAMIN A	THIAMINE	RIBOFLAVIN	NIACIN	ASCORBIC ACID	VITAMIN D
Adults												
	kg. (lb.)	*cm. (in.)*		*gm.*	*gm.*	*mg.*	*I.U.*	*mg.*	*mg.*	*mg.*	*mg.*	*I.U.*
Men												
25 years	65 (143)	170 (67)	3200†	65	0.8	12	5000	1.6	1.6	16	75	
45 years	65 (143)	170 (67)	2900	65	0.8	12	5000	1.4	1.6	14	75	
65 years	65 (143)	170 (67)	2600	65	0.8	12	5000	1.2	1.6	12	75	
Women												
25 years	55 (121)	157 (62)	2300†	55	0.8	12	5000	1.2	1.4	12	70	
45 years	55 (121)	157 (62)	2100	55	0.8	12	5000	1.0	1.4	10	70	
65 years	55 (121)	157 (62)	1800	55	0.8	12	5000	1.0	1.4	10	70	
Pregnancy (3rd trimester)			Add 400	80	1.5	15	6000	1.5	2.0	15	100	400
Lactation (850 ml. milk daily)			Add 1000	100	2.0	15	8000	1.5	2.5	15	150	400
Children up to 10 Years												
Infants‡												
1 to 3 months	6 (13)	60 (24)	kg. × 120	kg. × 3.5	0.6	6	1500	0.4	0.5	4	30	400
4 to 9 months	9 (20)	70 (28)	kg. × 110	kg. × 3.5	0.8	6	1500	0.5	0.8	5	30	400
10 months to 1 year	10 (22)	75 (30)	kg. × 100	kg. × 3.5	1.0	6	1500	0.5	0.9	5	30	400
1 to 3 years	12 (27)	87 (34)	1200	40	1.0	7	2000	0.6	1.0	6	35	400
4 to 6 years	18 (40)	109 (43)	1600	50	1.0	8	2500	0.8	1.2	8	50	400
7 to 9 years	27 (59)	129 (51)	2000	60	1.0	10	3500	1.0	1.5	10	60	400
Children over 10 Years												
Boys												
10 to 12 years	35 (78)	144 (57)	2500	70	1.2	12	4500	1.3	1.8	13	75	400
13 to 15 years	49 (108)	163 (64)	3200	85	1.4	15	5000	1.6	2.1	16	90	400
16 to 20 years	63 (139)	175 (69)	3800	100	1.4	15	5000	1.9	2.5	19	100	400
Girls												
10 to 12 years	36 (79)	144 (57)	2300	70	1.2	12	4500	1.2	1.8	12	75	400
13 to 15 years	49 (108)	160 (63)	2500	80	1.3	15	5000	1.3	2.0	13	80	400
16 to 20 years	54 (120)	162 (64)	2400	75	1.3	15	5000	1.2	1.9	12	80	400

* In planning practical dietaries, the recommended allowances can be attained with a variety of common foods which will also provide other nutrient requirements less well known; the allowance levels are considered to cover individual variations among normal persons as they live in the United States subjected to ordinary environmental stresses common thereto. Other nutrients discussed in the text include: fat, water, sodium chloride, phosphorus, copper, iodine, vitamin B_6, vitamin B_{12}, folacin, biotin, pantothenic acid, vitamin K, fluorides, and other trace elements.

† These calorie recommendations apply to the degree of activity for the reference man and woman. For the urban "white-collar" worker, they are probably excessive. In any case, the calorie allowance must be adjusted to the actual needs of the individual as required to achieve and maintain his desirable weight.

‡ The recommendations for infants pertain to nutrients derived primarily from cow's milk or commercial milk preparations. There should be no question that human milk is a desirable source of nutrients for infants, although intakes may not provide the recommended levels of certain nutrients; e.g., protein, calcium, thiamine, and riboflavin.

amounts needed in pathologic states or in rehabilitation following depletion. The margin between *minimal requirements* and *recommended allowances* varies among the essential nutrients. Reasons for this include variation in the body's capacity for storage, the extent of variation in individual needs, and findings in long-term animal experiments which indicate a wider margin between minimal and optimal intake for some nutrients than for others." It is recognized, also, that habitual consumption of diets containing an excess of certain nutrients, particularly calories, may lead to harmful effects on health.

NEW STANDARDS OF REFERENCE

The most important change in the new revision is the establishment of new standards of reference which will make possible estimates of caloric requirements adjusted more nearly to the needs of individuals. The desirability for adjustment in guides for determining caloric allowances was indicated by recent observations and analyses of factors influencing caloric requirements and the impressive evidence of the physiologic disadvantages of excessive consumption of energy sources in food, particularly in the middle and later years of life. In its establishment of a revised method of approximation of caloric allowances, the Board called freely upon the Report of the Committee on Calorie Requirements of the Food and Agriculture Organization of the United Nations (5). This report was published in 1950 and has been adapted for wide use in many areas of the world. In establishing caloric requirements for the individual, this report takes into consideration the factors of sex, age, body size, and climate and provides for a reference level of activity (Table 2). The caloric allowances in the new revision of Recommended Dietary Allowances utilize the FAO procedure but try to benefit from experience in applying this system as well as from new information accumulated in the past several years. Two minor changes in the original FAO scheme have been made. The decrease of caloric requirements by 7.5 per cent for each decade after age twenty-five has been reduced to 5 per cent, since informed opinion seems to indicate that the higher figure was an overestimate. In addition, the FAO system, as well as the 1948 revision of Recommended Dietary Allowances, indicated equal caloric needs for children of both sexes through the age of twelve years. The latest revision recognizes a higher requirement for boys than for girls ten years of age and older.

TABLE 2

Formulas for estimating caloric requirements using FAO reference standards (5)

ADJUSTMENT	FORMULA
For body size	
Men	$E = 152\ (W)^{0.73}$*
Women	$E = 123.4\ (W)^{0.73}$*
For age	Decrease 7.5% for each 10 years beyond age 25†
For mean environmental temperature	
For each 10°C. increment	Decrease 5%
For each 10°C. decrement	Increase 5%

* E = total caloric requirement; W = weight in kilograms.

† 1953 Revision of the Recommended Dietary Allowances adopts a decrease of 5% for each decade after age 25.

For adults, the basis for estimating the caloric allowance is a reference standard for men and women (Table 3). The "standard" man and woman are characterized as being twenty-five years old, living in a temperate climate with mean annual external temperature of 10°C. (50°F.), and having body weights of 65 and 55 kg., respectively. It is presumed that these individuals are engaged in moderate physical activity, neither being sedentary nor laboring excessively. The man might be employed in light industrial work or could be a delivery man, a painter, an outdoor salesman, or a farmer except in the periods of heaviest farm labor. The woman might engage in bench work at a factory or could be a shop saleswoman or active homemaker. It is assumed that each would have a moderate amount of outdoor recreation and would lead a healthy, vigorous life.

CALORIC ALLOWANCES

The "standard" man and woman thus selected differ from those in earlier versions of the Recommended Allowances. For instance, the "standard" man formerly was described as weighing 70 kg., and his age was not stipulated. A weight of 65 kg. at age twenty-five corresponds fairly closely to the average weight of young men of military age in this country. Caloric allowances are also given for adult males of the same weight, but at ages forty-five and sixty-five (Table 1). The reduced allowances in the older individuals represent a decrease of 5 per cent for each decade after age twenty-five. The new table will present similar caloric allowances for women.

TABLE 3

Reference standards for estimation of caloric requirement as recommended by the Committee on Calorie Requirements of FAO (5)

FACTOR	REFERENCE MAN	REFERENCE WOMAN
Weight	65 kg.	55 kg.
Age	25 yr.	25 yr.
Mean environmental temperature	10°C. (50°F.)	10°C. (50°F.)
Activity	8 hr. physical activity; 4 hr. sedentary activity	General household tasks; care of small children
Total calories	3200	2300

TABLE 4

Caloric allowances adjusted for weight as percentages of caloric allowances for standard man and woman

WEIGHT	PERCENTAGE OF ALLOWANCE FOR	
	Standard man	Standard woman
kg.		
35	64	72
40	70	79
45	76	86
50	83	93
55	89	100
60	94	107
65	100	113
70	106	119
75	111	125
80	116	131
85	122	137
90	127	143
95	132	149

The caloric allowances may be adjusted to fit the needs of individuals who differ in body size, age, and physical activity or who live in climates either colder or warmer than the standard of 10°C. A table for ready adaptation for body weight is to be included (Table 4). To demonstrate how this may be done, we can consider the instance of a stone mason, age thirty-five, who weighs 75 kg. and who works in the South during the spring where the mean temperature is 20°C. (68°F.). The table indicates that a man of 75 kg. would need 111 per cent of the calories allowed a man weighing 65 kg. This sum is reduced by 5 per cent for an additional ten years of age above the standard and by 5 per cent for the higher mean external temperature. It is estimated that the physical expenditure of energy in labor as a stone mason requires an additional 1000 calories. We find the man's caloric allowance to be about 4200 through the following calculation.

Allowance for reference man (age, 25 yr.; weight, 65 kg.)	3200 calories
Addition for weight of 75 kg.	350
	3550
Reduction for age (35 yr., 5%)	−177
	3373
Reduction for temperature (10°C., 5%)	−177
	3196
Addition for hard labor	1000
Total caloric allowance	4196

The Board recognizes the tendency of the average adult in the United States to gain weight after the age of twenty-five years. It is of the opinion that for purposes of health, the caloric allowances for the individual adult should be estimated not on actual body weight, but on ideal weight. To facilitate the adaptation of this procedure, a table of ideal weights for men and women of given heights will be recorded in the new revision.

Adjustments in caloric allowances for women during pregnancy and lactation are made. The extra allowance for pregnancy is limited to the third trimester, when 400 calories are added. This recommendation is based on the evidence that the caloric cost of pregnancy is slight during the first two trimesters, when compensations are made by apparent decreases in physical activity and hence in expenditure of energy. The caloric adjustments for women during lactation are made most precisely by allowing approximately 130 calories for each 100 ml. milk produced. Thus, the allowance of 1000 calories given in the table corresponds closely to the average daily milk production of 850 ml.

Caloric allowances for infants and children remain much the same as in the earlier tables. However, new categories of reference have been established to allow for the variation in energy needs per unit of body weight during the first year of life and the greater requirement for calories used by boys in the ten-to-twelve age group. Caloric allowances for infants and children are to be considered only as rough guides in the feeding of groups; they are even less applicable to individuals than are those for adults. It should be remembered that the rate of growth, appetite, and degree of body fatness in these age groups vary markedly and can only be partially accounted for in arbitrarily determined caloric allowances.

The changes in the standards of reference for determining calories have made changes necessary in the allowances for other essential nutrients. However, with but one exception, the quantitative basis for determining the allowances remains the same, and the different values are simply adaptations to the differences in body weight of the standard individuals. The exception is the calcium allowance for which a new quantitative value is to be recorded.

PROTEIN ALLOWANCES

Protein allowances recommended for normal adults are based on a standard of 1 gm. protein per day for each kilogram of body weight. This value was used in earlier editions of Recommended Dietary Allowances and has been demonstrated to afford a reasonable margin of safety. These allowances for protein assume adequate caloric intake. Energy expended in physical activity does not increase protein requirement if the caloric requirement is satisfied.

The increased allowances (for protein) in pregnancy and lactation should be interpreted as relative needs rather than accurate requirements, since the actual need will vary with body size. The evidence in the literature indicates that the increase in protein need begins in the latter half of pregnancy and is greatest when lactation has reached its maximum.

The quantity of protein needed to maintain nitrogen balance in infants and children is much greater per kilogram of body weight than in adults. The amounts actually required vary with the size of the child and the quality of protein. Under usual circumstances, needs will be satisfied with allowances of 3.5 to 4.0 gm. protein per kilogram in infants, 2.5 to 3.0 gm. in early childhood, and 1.5 to 2.0 gm. in late childhood and early adolescence.

CALCIUM ALLOWANCE

In preparing the new revision of the Recommended Dietary Allowances, much thought was given to the calcium allowance. An extensive review of the literature was undertaken, and it was found that in controlled studies, equilibrium was usually achieved in the adult at intakes of from 500 to 600 mg. per day. It seemed unlikely that maintenance of normal skeletal tissues over any extended period of time could be expected with diets affording less than 500 mg. per day. However, the data indicate that the body can adapt rather remarkably to varying levels of calcium intake and that individual variation in the efficiency of utilization is great. The Board believed that the calcium allowance of 1.0 gm. daily for adults, which was recommended in the 1948 revision, was higher than necessary. It, therefore, reduced this allowance to 0.8 gm. per day.

The greater allowances for pregnancy and lactation were retained, as were those for infants and children with the exception that the allowance for sixteen-to-twenty-year-old girls was increased from 1.0 to 1.3 gm. per day since it has been demonstrated that girls as well as boys of this age utilize increased quantities of dietary calcium.

IRON ALLOWANCES

The allowances for iron were reaffirmed. The observations on iron requirements and utilization which have been published since 1948 afford support to the values previously selected. Thus, the allowance for adults will remain at 12 mg. per day with an additional quantity of 3 mg. suggested for periods of pregnancy and lactation in women.

VITAMIN A ALLOWANCES

Vitamin A allowances also remain unchanged. For adults, 5000 I.U. a day are recommended. It is anticipated that in the American diet two-thirds of this quantity will derive from carotene in foods and one-third will be consumed as the preformed vitamin. Experimental observations published since the last revision in 1948 would seem to authenticate this level of intake as offering a suitable margin of safety.

B VITAMINS

Thiamine allowances are determined in relation to the total calories of the diet. This approach was used in earlier tables of Recommended Dietary Allowances. Recently published investigations seem to add to the validity of this approach and are in accord with the previously listed basic allowance of 0.5 mg. per 1000 calories. This allowance as related to calories would seem to provide a desirable margin of safety throughout life and during periods of stress, such as in pregnancy and lactation. The figures to appear in the table have been adjusted to conform with the revisions in caloric allowances.

The literature concerning requirements for *riboflavin* has been carefully reviewed. Most investigations pertain to needs of adults. The requirements for riboflavin, like those for protein, do not appear to be influenced by the individual's activity. Therefore, the allowance of riboflavin is more reasonably related to body size than to caloric needs. There is evidence, also, that this vitamin is required in increased amounts for growth and tissue regeneration. These physiologic states have been more extensively studied in terms of their effect on the protein needs. It, therefore, seemed reasonable to relate riboflavin allowances to protein allowances. A factor was derived, 2.5×10^{-5}, for purposes of conversion. The protein allowance multiplied by this factor gives a value for the riboflavin allowance which correlates well with research reports.

The levels of intake for riboflavin in the new table of Recommended Dietary Allowances were derived by this means and are not appreciably different in most categories from those recommended in 1948. The apparent decrease in some values for adults is a function of the smaller "standard" man in the present revision. The quantities allowed in pregnancy and lactation are somewhat lower but are consistent with recent interpretations of the needs of women during these periods. Allowances for infants have been related to the average amounts ingested when human milk is the sole source of riboflavin.

A number of laboratories have been concerned with investigations pertaining to requirements for *niacin* and their relation to the protein of the diet. It has been demonstrated that the essential amino acid, tryptophan, may be converted to niacin in man and in a variety of experimental animals. Niacin requirements, therefore, can be established only in relation to the quantity of tryptophan ingested. The practical application of this important consideration in dietary standards can only be made when more information is available concerning the amino acid content of the common foods. The recommended allowances for niacin in the 1948 revision were established at levels ten times those of thiamine. These quantities would seem to afford a margin of safety of 50 per cent or more if the diet also contains an adequate supply of good quality protein. They are retained in the new revision.

ASCORBIC ACID ALLOWANCE

After thoughtful deliberation, the Board took action to retain and reaffirm the allowances for ascorbic acid as stated in 1948. These levels of intake, which are approximately three to five times the values recorded in the literature for protection against the appearance of gross signs of scurvy in infants, children, and adults, are considered necessary for the best returns in health over long periods of time and for protection against the effects of common forms of stress. It is also agreed that intakes greater than those recommended will result in distinctly higher concentrations of the vitamin in tissues. The values will correspond, therefore, with those recommended earlier, i.e., 75 and 70 mg. ascorbic acid daily for the reference man and woman, respectively.

VITAMIN D ALLOWANCE

The dietary allowances for vitamin D were not changed, and 400 I.U. daily are recommended for infants, children, and adolescents. It has been amply demonstrated that vitamin D is needed throughout the growth period. Needs are greatest in infancy and adolescence. Under nearly all circumstances, an intake of 400 I.U. permits good calcium retention when milk is consumed in adequate quantity. Pregnancy and lactation are associated with increased requirements for calcium and phosphorus, and utilization of these minerals is increased if supplemental vitamin D is provided. Therefore, 400 I.U. are recommended as the allowance for these periods in the new revision.

OTHER NUTRIENTS

The requirements for other nutrients are to be discussed in the text. Included are: fat, iodine, water, salt, phosphorus, copper, vitamin K, and folic acid. With some, but not all, the daily allowance is indicated, as has been done in earlier editions of Recommended Dietary Allowances. In addition, the Board has considered the evidence for inclusion of certain other nutrients—vitamin B_6, biotin, vitamin B_{12}, and pantothenic acid—as essential in man's diet. These will be discussed in the text for the first time. Although each of these is accepted as an essential nutrient for man, quantitative allowances are not given.

The use of the National Food Guide (6) or "Basic Seven" has again been approved as useful in selecting an adequate diet in the United States. Some of the problems in using this grouping are pointed out, however. At best, it is but a rough guide since the size of servings will vary greatly and there is marked variation in the nutritive value of foods which have been grouped together. An inadequate diet may readily result if there is consistently poor choice of foods from each of the seven groups. For certain individuals and population groups, it is essential to select nutritively high quality foods regularly or it will be difficult to meet needs without an excess of calories.

Since the 1948 revision of Recommended Dietary Allowances, national dietary standards have been established by two neighbor nations, Canada and Great Britain. Since comparison with the Allowances undoubtedly will be made, the basis on which each has been founded must be fully appreciated. The Canadian standards represent *probable physiologic requirements* and "may be used to indicate a *nutritional floor* beneath which maintenance of health in people cannot be assumed" (7). In essence, this standard approaches minimal requirements. The British standard, which was proposed by the Committee on Nutrition of the British Medical Association, provides estimates of calories and various essential nutrients in quantities sufficient to establish and maintain a good nutritional state in *representative individuals* (8). These are planned for the average person, but it is recognized that some members of every group may require more than the average. The British standards are, therefore, similar in principle to the Recommended Dietary Allowances. However, the United States allowances afford somewhat broader coverage in that they are designed for maintenance of good nutrition in substantially *all* normal persons and include *a margin of safety.*

In the new revision of Recommended Dietary Allowances, the Food and Nutrition Board has attempted to make only those changes which seem fully warranted in terms of our modern knowledge of nutrition. It is hoped that these allowances will be readily adaptable to the needs of many workers in the field of nutrition in the United States and that they will afford a useful guide for establishing modern food practice and policy.

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Current Research in Nutrition[1]

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MANY important researches in nutrition are in progress today. Rather than attempt to review them all, I have chosen to consider four topics which describe past and possible future developments in this field as well as certain contemporary studies. They are: (a) the scope of the field of nutrition, (b) the evolution of nutrition research throughout the years, (c) the areas of current research in nutrition which appear to me to be particularly significant, and (d) an outline of certain problems which appear to be at the forefront for future study.

SCOPE OF NUTRITION

The field of nutrition is of enormous scope. Those of us working on one or another area of applied nutrition or basic research frequently fail to realize the breadth of the spectrum of activities and disciplines that bear on the subject of nutrition. Nutrition deals with food and with the processes by which food is utilized in the living organism. Nutrition has been defined as "the science of food and its relationship to life." Both parts of the definition embrace broad spheres of activity. A study of food brings into focus the disciplines of agriculture, geography, soil chemistry, economics and marketing, social anthropology, food technology, cookery, and dietetics.

A study of the relationship of food to life involves the study of psychology, psychiatry, biochemistry, physiology, pathology, microbiology, endocrinology, hematology, gastroenterology, dermatology, cardiology, ophthalmology, and dentistry to mention but a few. With the conquering of the menace of most infectious diseases in the civilized world, it is probable "of all the environmental factors affecting health in present-day civilization in this country, none is more important than nutrition" (1). Nutrition therapy cuts across all of the specialty barriers in medicine and surgery, and nutrition research borrows techniques from, and contributes data to all of the basic medical sciences. To my way of thinking, we are working in a very important and exciting field.

HISTORY OF NUTRITION RESEARCH

In considering current research in nutrition it might be well to pause and ask the question: "Where have we come from and where are we going?" The evolution of research in nutrition is a fascinating story which is familiar to most of you, but I think we should review it in order to put our current activity in the proper perspective.

I look at it as a play in four acts—a play, furthermore, in which the acts overlap to a certain extent in marking epochs of thinking about nutrition. The first act describes the age of the single nutrient—calories or energy. Hippocrates (2), in 400 B.C., recognized food as a source of energy. In 150 A.D., Galen (3) deduced that nutriment was carried to tissues by the blood. In the seventeenth century, Sanctorius (4), that indefatigable experimental nutritionist who spent most of his professional life sitting on an enormous balance, discovered that the production of animal heat was accompanied by an insensible loss of weight which could be replaced by food. Finally, Lavoisier (5) in 1780 recognized the true nature of animal combustion as an oxidation of carbon and hydrogen in the food to carbon dioxide and water with the production of chemical energy.

Not until the discovery of proteins by Mulder (6) in 1838 did nutritionists turn their attention to the composition of diets with regard to specific foodstuffs, although sweet and oily foods had been recognized for centuries. Mulder's discovery prompted Liebig (7) to carry out comprehensive studies of food composition with regard to fat, carbohydrate, protein, and ash, and rung down the curtain on Act I of our drama. Thus the one-nutrient-age lasted from 400 B.C. to 1840 A.D.

The age of four nutrients was an age of adolescence, of ferment, of strong opinions. Liebig assigned caloric values to the foodstuffs, and Rubner (8) discovered the isodynamic law of caloric equivalents and the relationship of surface area to basal metabolic rate.

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The age of four nutrients provided its own downfall by demonstrating that four purified nutrients would not sustain growth in the rat. These experiments, carried out by Hopkins (9) in England at a time when clinical studies in the Far East suggested the idea of trace nutrient deficiencies in man, and summarized in his classic essay in 1912, ended the age of four nutrients and introduced us to the third act of our play, the age of multiple nutrients, that of accessory food factors, or of trace nutrients, whichever seems to be the most appropriate.

The age of four nutrients lasted from 1840 until 1912. Nutrition research in its next period of lusty young adulthood was rugged and productive. Fat-soluble vitamins were separated from those which are water-soluble and partitioned in alphabetical groups; comparative studies of deficiency syndromes in different animals were carried out; the essential amino acids were sorted out; many human deficiency diseases were identified and their specific causes elucidated. In the midst of this feverish activity, the discovery by Warburg and Christian (10) in 1932 of the presence of the vitamin riboflavin in the coenzyme of a respiratory enzyme set the stage for act four of our drama while act three was still in full swing. The significance of Warburg's discovery, namely, that trace nutrients were key molecules in the enzymatic structure of cells, gave new zest to and immediately captured the imagination of nutritionists and enzymologists alike and has been the guiding hypothesis for studies of cellular nutrition during the past twenty years.

Today we recognize some fifty purified nutrients which together will support growth and development in animals. They include minerals, vitamins, amino acids, fatty acids, water, and total calories. It is probable that we still do not have them all, but we are certainly approaching a limit asymptotically and the curtain on Act III of our play is edging down. The age of identifying and purifying new growth factors for the mammal is, I believe, nearly over.

Current research in nutrition is devoted to a study of interrelationships between nutrients and to a search for functional forms of dietary constituents in protoplasm. We are living in the research age of nutrients as biocatalysts and structural essentials for the elaboration of tissues. In general we know what the nutrients are; we have yet a way to go in learning what they do. Although, for example, we have a reasonably complete knowledge about the function of certain vitamins of the B-complex in metabolism, we are very hazy about the action of the fat-soluble vitamins. I believe this is due in part to our methodology. B-complex vitamins are concerned, in general, with the oxidation of tissue substrates while fat-soluble vitamins are concerned with synthetic processes. Although we know something about the function of vitamin A in vision, we do not know what it does to maintain the integrity of epithelial tissues in the body; the specific action of vitamin D at the enzymatic level still eludes us; we know that vitamin K is concerned with the elaboration of prothrombin in the liver, but the exact mode of action of this vitamin in catalyzing the synthesis of a protein is not known. Finally, vitamin E, that most enigmatic and abused of all vitamins, still needs assignment to a specific enzymatic function or type of function which will reconcile its many reported effects in experimental nutrition and its failure of effects in clinical studies. We are certainly not running out of problems.

AREAS OF CURRENT RESEARCH

I should now like to turn to a consideration of a number of significant problems in nutrition which are being given extensive study in various laboratories. Some illustrate the difficulty in arriving at definitive solutions to old but very important problems; some represent significant and fundamental advances in our knowledge about the function of nutrients.

The Caloric Problem

The calorie, you will remember, was the first nutrient. It still poses problems for us. For Americans generally, it is the problem of too many. We know something about the hazards of obesity in terms of longevity and associated degenerative diseases, and this has stimulated physicians, nutritionists, and even journalists to launch dietary warfare on obesity. There have been many fads and fancies; there have been arguments about the role of endocrines, although the final conclusion is that the only glands that have to do with obesity are the salivary glands. There have been arguments among nutritionists as to just what dietary composition achieves reduction safely and easily without deprivation of other nutrients. The only point of unanimity among protagonists is the general acceptance of the laws of thermodynamics, and even on this point, some of us need extra homework.

For most patients reducing is not easy, and for many intolerable. This leads to the problem which is currently being reinvestigated, namely, what drives us to eat? Why should an obese patient be driven by appetite to maintain fat depots which are three to five times normal? Why does the young adult male maintain essentially constant ideal weight through a tremendous range of total energy exchanges while the middle aged female achieves obesity at a constant sedentary activity? The mechanism of normal appetite, which means precisely balancing the energy intake against the energy output day after day, is an old and challenging problem.

As a basis for this discussion, I think we can assume that the urge to eat, like other urges, is a function of activity within the central nervous system. It appears quite clear, in addition, that lesions of the

hypothalamus in rats and occasionally in man are associated with polyphagia and obesity. The hypothalamus is also concerned with other important urges, including the sex drive and sleep; it regulates autonomic activity of both the sympathetic and parasympathetic systems; it is concerned with water and heat balance; and, finally, it probably mediates most effects of the cerebrum on autonomic functions. Jolliffe (11) has called it the "appestat." Experimental evidence suggests that the "appestat" is sensitive to both nervous and humoral stimuli. The well known effect of anxiety in modifying food intake is familiar to us all. In the pathologic realm, anorexia nervosa and obesity have been seen in the same patient in different phases of a neurotic disease (12). In support of the humoral effects are the data of Carlson (13) who, in 1913, demonstrated that hypoglycemia stimulated hunger associated with increased gastric secretion and motility in dogs. More recently, Mayer (14) and his colleagues at Harvard University have embraced the so-called glucostatic theory of food intake on the basis of experiments in rats in which sustained hyperglycemia was shown to be associated with a decrease in food intake. In diabetes mellitus, where hyperglycemia and polyphagia coexist, the situation becomes more complicated. Mayer and his group argue in this case that it is the "metabolically available" glucose that is important in determining food intake and that the evidence of hunger in diabetics with peripheral A-V glucose differences close to zero proves the point. Actually, no one has succeeded in showing that the cerebral glucose uptake parallels the peripheral glucose uptake in diabetes mellitus. In fact, the diabetic brain appears to take up glucose quite normally despite the peripheral defects (15). What the hypothalamus specifically is doing under these conditions is not known. There is little doubt that blood glucose levels exercise some effect on appetite control; that blood glucose levels, on the other hand, are the sole or even the most important factor in the control of appetite in man is highly doubtful. Pennington (16) has suggested that elevated blood pyruvate levels may be an indirect humoral factor in appetite control by favoring lipogenesis in the obese, although the data supporting this are extremely tenuous. No one appears to have undertaken the investigation of amino acid levels in connection with appetite and obesity, despite the fact that glutamic acid is rapidly oxidized by cerebral tissue. The field of the study of the mechanism of appetite is open for further investigation which we will await with great interest.

Vitamin-Enzyme-Hormone Relationships

The second area of current research I should like to discuss briefly are the advances made in the field of vitamin-enzyme-hormone interrelationships. Most vitamins of the B-complex have been shown to function in metabolism as coenzymes, i.e., derivatives of the vitamins which are essential for enzymatic activity of one or more of the intracellular proteins. Sometimes the biochemical change in the vitamin which results in coenzyme formation is quite simple, as in the case of thiamine (vitamin B_1) to which are added two phosphoric acid groups to form thiamine pyrophosphate, or the case of pyridoxal (vitamin B_6) which becomes pyridoxal phosphate. In other cases, such as that of riboflavin or niacin, the reactions are more complex and involve formation of nucleotides.

The most recent vitamin added to the list of those which function as coenzymes is *pantothenic acid*. Largely through the work of such investigators as Lipmann *et al.* (17), Stern and Ochoa (18), and Lynen and Reichert (19), identification and function of coenzyme A—the active form of pantothenic acid—has been worked out. Coenzyme A consists of adenylic acid, phosphoric acid, pantothenic acid, and a sulphur moiety, β-mercaptoethylamine joined end to end. It is essential for the catalysis of all biologic acetylation reactions which have been studied. In fact, acetyl-coA, which is a thioester of acetate and coenzyme A, has been identified as the "active C_2-fragment" of metabolism through which the carbon and hydrogen of all oxidizable substrate, whether derived from fat, carbohydrate, or protein, funnels on the way to carbon dioxide and water. In addition, the C_2-fragment is an important building block in the synthesis of fatty acids, cholesterol, porphyrins, acetylglucosamine, a precursor of connective tissue, and many others. Coenzyme A stands at a focal point in metabolism and the suspected importance of pantothenic acid, a vitamin nearly ubiquitous in all foods and tissues, is established.

In our own laboratory, we have been interested in the origin of the sulphur-containing moiety of coenzyme A, β-mercaptoethylamine or thioethanolamine. Certain recent studies suggest that it is derived from dietary cystine. By rigidly restricting the diets of experimental animals in methionine, cystine, and vitamin E, it was found possible to lower the hepatic coenzyme A levels apparently even to the point of tissue necrosis (20). In previous studies we had shown that restriction of dietary pantothenic acid causes a reduction in tissue coenzyme A levels and certain metabolic derangements (21, 22). It appears that restriction of organic sulphur in the absence of vitamin E is just as effective. It is also of considerable interest that this effect is greatly minimized in the presence of vitamin E, which suggests that vitamin E protects the supply of the sulphur amino acids in the body, when they are scarce.

Another fascinating, sulphur-containing, biologically active molecule in metabolism is α-lipoic or thioctic acid. It has recently been established to be of importance, along with thiamine, in the metabolism

of α-keto acids, such as pyruvic and α-ketoglutaric acids. This vitamin was first shown to be a growth factor for *Lactobacillus casei* by Guirard, Snell, and Williams in 1946 (23). In addition, it was discovered by these workers that this growth factor could be replaced by acetate. Subsequently O'Kane and Gunsalus (1948) (24) showed that this factor was important in the oxidation of pyruvate by bacteria, which explained its acetate-replacing activity. Concerted studies of this substance by Reed and coworkers at the University of Texas (25), and by Bullock *et al.* (26) at the Lederle Laboratories have resulted in its isolation, identification, and synthesis. In animal tissues, thioctic acid is biologically synthesized and, therefore, not required in the diet. It appears to function in combination with thiamine in decarboxylating α-keto acids and capturing the decarboxylation product for transfer to coenzyme A. Even more exciting is the discovery by workers in the field of photosynthesis (27) that thioctic acid may be the energy transformer which allows the solar energy captured in chlorophyll to accomplish the oxidation of water.

In the field of endocrine-nutritional interrelationships it has been recently shown that alloxan-diabetic rats do not convert thiamine to cocarboxylase at a normal rate (28), which may account for a number of observations, some made in our own laboratory that, not only the oxidation of glucose, but also that of C_2- and C_3-molecules derived from glucose such as acetate, lactate, and pyruvate are also more slowly oxidized (29). The exact role of insulin in metabolism is still an enigma. The earlier evidence implicating hexokinase (30), the enzyme that phosphorylates glucose, as the major site of activity, has not been entirely confirmed, and, although insulin may have some activity at that point in metabolism, there appear to be other sites as well. The data of Chaikoff (31) and of Stetten (32) suggest that insulin plays a role in the synthesis of fatty acids from acetate. At present, it seems inescapable that insulin affects several enzyme systems in accomplishing its physiologic effect.

In another area of research, it has been discovered that labile methyl groups, heretofore thought to be dietary essentials (33), may be synthesized to a limited extent in animal tissues. Glycine, serine, and formate appear to be the carbon sources for this labile methyl synthesis. It has been found, furthermore, that the vitamins folic acid and B_{12} are concerned in some way with this synthetic process. The existing evidence suggests that folic acid and its active form, folinic acid, are concerned with the metabolism of the formyl radical in metabolism and that vitamin B_{12} acts in a less well defined way to promote nucleotide synthesis (34). Much investigation is now underway to define precisely the role of vitamin B_{12} and thus elucidate the nature of the metabolic block in pernicious anemia.

Interesting developments have also occurred in the field of trace metal biochemistry and nutrition. Cobalt has been identified as a constituent of vitamin B_{12} (35), and molybdenum has been found to be the xanthine oxidase factor of Westerfeld and his coworkers (36, 37). Zinc deficiency, both in animals (38) and *Neurospora* (39), has been noted to cause marked abnormality in tissue enzyme patterns.

PROBLEMS TO BE SOLVED

As a final topic, I should like to consider some problems in nutrition which appear to me to be of special interest for future study. The unraveling of the interrelationships of nutrients in metabolism will, of course, continue unabated with high promise of many new and exciting surprises. I am thinking, however, of another important area for research by nutritionists which is crying for attention. It is the problem of nutrition in chronic disease in man.

With the increase in the longevity of man, more people are living long enough to become afflicted with numerous degenerative diseases. Public health nutritionists in the past have dealt almost exclusively with the problems of undernourishment in otherwise healthy individuals. The National Research Council allowances for nutrients are based on the estimated dietary needs of well persons. We have only a glimmer of what the nutritional requirements are for patients with heart failure; arteriosclerosis; cancer; rheumatoid arthritis; sprue; ulcerative colitis; cirrhosis of the liver; diabetes; and other chronic metabolic, vascular, or neoplastic disorders. It is unfortunate, but true, that clinical investigation in this field has lagged badly.

In our own laboratory we are interested in the problem of the biochemical and nutritional abnormalities which develop in association with congestive heart failure (40). It is now possible, by means of cardiac surgery, B-complex deficiency diets, and thyroid excess to induce sufficient myocardial or valvular damage in dogs to produce typical congestive heart failure. Studies in our laboratory are now in progress to elucidate the changes in nutritional requirements which occur as these animals develop advanced congestive heart failure and parallel studies are planned in cardiac patients. Further information is needed about the genesis and mechanisms of malnutrition in advanced neoplastic disease, in rheumatoid arthritis, and in cirrhosis of the liver. Certain complicated multiple deficiency diseases like tropical ulcer and Kwashiorkor also require further biochemical study. The next decade should provide some solutions to these problems.

I should like to conclude my crystal gazing with a tentative answer to a question which is one of those uppermost in the minds of those of us concerned with the practical, as well as, the experimental aspects of nutrition: How is current research in nutrition likely to influence the future practice of hospital dietetics,

diet therapy, and public health nutrition? I dare to say in many ways. We think now in terms of sodium and caloric restriction for the obese and hypertensive patient, bland diets for patients with peptic ulcer, potassium and protein restriction for the uremic individual, and high-protein, high-vitamin nutrition for the patient with hepatic disease. I foresee an era of modern therapeutics when dietary management will go far beyond our relatively crude prescriptions—when trace metals and specific amino acid restriction or supplementation will be important therapeutic aids; when specific ratios of nutrients may be important in the management of a disease; when public health nutritionists will be required to know the lesser, as well as the greater members of the B-complex because of their importance in a chronic disease. Current dietary management should not be considered codified, and we must remain flexible in our thinking about the nutritional needs of patients with chronic disease.

I firmly believe that a sound knowledge of nutrition will become more important in the practice of medicine and public health as the years pass, and the role of the dietitian and public health nutritionist will become increasingly important and integral. The new horizons are illimitable, and we must be prepared to act upon our newer knowledge of nutrition.

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BIOGRAPHICAL NOTES FROM THE HISTORY OF NUTRITION

Lafayette Benedict Mendel—February 5, 1872–December 9, 1935

Throughout the ages there have been in every century a few men who have stood out as the great teachers—great because of the influence they had on the development of science and on the lives of their pupils. Such a man was Lafayette Benedict Mendel, research worker, teacher, counselor, and friend of students.

Nutrition frequently has been referred to as a "twentieth century science" and Mendel was the one who for the first quarter of the century carried on investigations in almost every phase of nutrition, dominated the field of study of the essential amino acids, and contributed major researches leading to the identification of vitamin A and the B-complex. From 1909 to 1928 he collaborated with Thomas Burr Osborne in what has been described as "the most fertile combination of minds ever directed toward studies of nutrition."

Lafayette B. Mendel was born in Delhi, New York on February 5, 1872, the son of Benedict and Pauline (Ullman) Mendel. His entire scientific life was spent at Yale University where he received his bachelor's degree in 1891 and the following year began his teaching career as Assistant in Physiological Chemistry. He obtained his doctorate at Yale at the age of twenty-one in 1893, was promoted to Professor in 1903, and became Sterling Professor of Physiological Chemistry in 1921. While an Instructor, Mendel was on leave (1895–96) and studied under Heidenbain at Breslau and E. Baumann at Freiburg University.

McCollum, who attended Mendel's lectures in 1906–07, says that no one surpassed him in thoroughness of instruction in biochemistry. He was an indefatigable worker and a meticulous investigator. He seemed to have read everything in the field of physiologic chemistry and nutrition and had an amazing memory for what he read, even to volume and page. While a student at Baumann's laboratory, in his "spare time" he read every paper in the first twenty-two volumes of Hoppe-Seyler's *Zeitschrift*. Throughout his life many evenings and one full afternoon a week were devoted to reading, but he always did his own thinking.

Much of our foundation knowledge of proteins was laid by Mendel and his associates. Using rats, he determined the biologic value of isolated proteins and showed that amino acids were the limiting factor in the nutritive value of proteins. In his classic protein experiments, he showed that gliadin would provide for maintenance of the rat but not for growth unless lysine were added, that zein would not support life without tryptophan, and that lysine was essential for growth. By using "protein-free milk" as the basis of the experimental diets, Mendel and his associates learned that certain substances, then unknown, must be supplied in the diet for growth and reproduction of animals. Such studies on fat in the diet led to the discovery of vitamin A and contributed to the discovery of the B vitamins.

Mendel was a gifted writer, and his papers are notable for their logical arrangement and clarity of expression. He was an editor of the *Journal of Biological Chemistry* (1911–35), *Journal of Nutrition* (1928–35), and *Physiological Reviews* (1921–24) and author of *Changes in the Food Supply and Their Relation to Nutrition* (1916) and *Nutrition—The Chemistry of Life* (1924). Honorary degrees, medals, and many other honors came to him in recognition of his achievements. He was the first President of the American Institute of Nutrition. Science, medicine, dietetics, and home economics were all of interest to him.

Gardening, walking, and travel were his chief recreations. Probably most of all he enjoyed his students; 92 students received their doctorates under him (and many are the leaders in nutrition research today) and 237 graduate students and 96 advanced research fellows and visitors received part of their training from him. He had a magnetic personality and was always kind and sympathetic, ready to help and counsel.

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Health Programs in Latin America

Role of U. S. Technical Aid[1]

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ANY story of modern international health work which does not include the record of the World Health Organization (WHO) is at best incomplete; and when the story concerns the Western Hemisphere, the central figure must be the Pan American Sanitary Bureau organized in 1902—the oldest international health organization—and now the World Health Organization office for the Western Hemisphere.

What, then, is the story of the bilateral health programs in Latin America? It began soon after the onset of World War II which WHO was to follow. The setting was the Conference of Foreign Ministers of the American Republics in 1942 which took an over-all view of the problems of all-out war and called for cooperation on health and sanitation programs as a measure to strengthen and mobilize the resources of the western republics for war and for the peace to follow.

The United States, through the office of the Co-ordinator of Inter-American Affairs, promptly launched cooperative health programs in eighteen of the Latin American republics. These programs, born of war, have become part of a long-range program to help our neighbors to the south to help themselves.

The results of these programs and their present administration were surveyed in late 1951 and early 1952 by a team of experienced health and administration workers, of which I had the honor to be named leader. We attempted to determine whether the programs were being administered effectively and if changes could make them more efficient and effective.

The picture we found was of cooperative administration, so well carried out that it is becoming a pattern for the extension of the Point IV Program to other countries. The pattern is almost too simple to have come from a seat of government as complicated as ours.

The representative of the United States government in health and sanitation, known as Chief of Party, worked in each country directly with the Minister of Health of that country. Together they developed an annual plan for health work, which incidentally was not subject to veto by the central office in Washington. It became in most of the eighteen countries a logical attempt to solve the most important health and sanitation problems.

THE SERVICIOS

Once the plan was developed, it was put into operation by a special agency in the individual country's government which has been given the generic name of *Servicio*. In most of the countries, the *Servicio* is under the administration of the Chief of Party (the U.S. representative); in one, Brazil, the Director is a national, one of the outstanding public health officials of the country. (The first Brazilian to serve in this capacity is now the Director-General of WHO.) In several other countries, the Assistant to the Director is a well-trained national health officer.

Our evaluation team was impressed with the tremendous interest of the countries and their governments in the work of the *Servicio*. It was almost always well received and well spoken of—in a few instances so much so that the regular health service of the country suffered in prestige and funds. In most cases, however, the program has been deliberately aimed at increasing the prestige of the national health service in the individual country, and this philosophy has in most instances been successfully maintained.

Also, in most of the countries studied, our Ambassadors and their staffs were impressed with the excellent work done by the *Servicios*. This, more than any other factor, was undoubtedly responsible for the continuation of the work of the Institute of Inter-American Affairs after the end of the war. In fact, it was undoubtedly the effectiveness of these bilateral programs in Latin America which convinced Congress that these programs should be extended to Africa, the Middle East, and Asia as the Technical Assistance, or Point IV, Program.

[1] Presented at the 36th Annual Meeting of The American Dietetic Association in Los Angeles, on August 26, 1953.

At the time of our study, approximately $102 million had been expended on the program in the eighteen countries. At the beginning, almost all of the funds were contributed by the United States; now, however, 75 per cent, on the average, is contributed by the host country and, of the total, less than half is from the United States.

In spite of the formal organization of the WHO in 1948 (after two years under the Interim Commission), and in spite of the excellent work which this specialized agency of the United Nations has done and is doing, the United States has felt, along with the WHO, that participation by any one nation to the extent of contributing more than one-third of the basic budget of the WHO would endanger its true and unfettered character (1). Therefore, our government, wishing to assist many countries in the fields of health and sanitation, has continued its service on a bilateral basis in Latin America and has extended the program to other sections of the world.

In these bilateral health programs, the leadership of the WHO is continually recognized. Regular meetings of the officials of the Pan American Sanitary Bureau (the office of the WHO in the Western Hemisphere) and the leaders of the bilateral program for health and sanitation in Latin America are held in Washington. These cooperative relationships have percolated into the field. In many countries, the WHO workers and those of the bilateral health programs frequently meet with the national health leaders to plan the work so that duplication will be avoided and full use may be made of the resources and facilities placed at the disposal of the country.

More and more, the evidences of cooperation and coordination have become apparent, and as this spirit of cooperation increases, there are fewer instances of duplication and a more effective use of the total resources available.

LATIN AMERICAN HEALTH PROGRAMS

Our study in each country repeatedly demonstrated the great value of the work of the bilateral health programs and indicated that the primary interest was in the prevention of disease.

In almost all of the countries, health centers somewhat on the pattern of those found in the United States have become a part of the program. Frequently the proposal for the development of health centers came from the national leaders, many of whom had visited in North America and had attended schools of public health in our part of the world, rather than from the United States representative, the Chief of Party. However, this did not usually prevent attention to the treatment of disease, and many hospitals were constructed, equipped, and placed into operation for the care of those who required attention by doctors and nurses.

I shall never forget the attitude of the poorer people in the city of Quito, Ecuador, toward the Maternity Hospital which had recently been opened and in which are now born well over half of the babies in that city. Even though many of the old traditions of the people in Quito were broken, the poor still realized the value of delivery in this hospital and have gone to it to have their babies. The tradition that no fresh air must be allowed in a sick room has been shown to have no basis. The tradition that requires at least fourteen days' bed care for the woman after childbirth has also been broken, the mothers being discharged in four or five days without bad results. The broken tradition that the placenta must be buried in the appropriate manner has resulted in no illness or trouble for the mothers or the babies. And so, as we sat in the market place one evening discussing these problems with the people, we received assurances that the work of the Maternity Hospital was the new tradition in the lives of these women, many of whom bear a child each year until they die or grow old.

It is true that in some communities hospital planning was not done carefully enough, and several of these facilities have never been put into use because the cost of operation of the type of building provided was too great. However, most of these mistakes were made at the beginning of the program when programs were agreed on, in some instances before the Chief of Party—physician or engineer—reached the country.

Many of the Chiefs of Party for the health and sanitation programs are sanitary engineers. That species of health worker is common to the United States but less so in many parts of the world. These leaders have given particular consideration to pure water supplies, sewage disposal, the provision of community laundries and bath houses, and sometimes to slaughter houses and markets.

I will not soon forget the "inauguration" of a water supply in northern Ecuador at the city of Tulcan. A great ten-day celebration had been arranged with the Minister of Health and the Chief of Party of the *Servicio* as the honored guests. There were speeches by the hour, along with games, feasting, and dancing, to celebrate the consummation of the project on which the people had worked for over ten years and which had finally been completed with the help of the engineers of the *Servicio*.

Equally dramatic was the dedication of a public laundry in Quito where in the speech by the Mayor, thanks were given to the taxpayers of the small towns in the United States whose money had been used along with that of the people in Quito to build the laundry. Its advent meant that the poor in that section of the town would no longer be forced, in order to do their laundry, to walk many blocks to the river which, at that time, still served as the sewer of the city. These dedications, often attended by our Ambassador, gave the people of the various com-

munities the knowledge that the United States was helping them to obtain the new services which were almost always greatly needed and in great demand. The newspaper stories of these dedications spread far and wide the information about the projects.

NUTRITION PROGRAMS

It will be of interest to you to know that nutrition programs have been included in the work of the Institute of Inter-American Affairs. In Peru, Ecuador, and Colombia excellent programs are going on in the laboratory and in the field. I personally visited the laboratories in Peru and Ecuador and heard at first hand the story of the development of information about the available foods so that the nutritionist, the doctor, and the nurse might have accurate information to pass on to the people. The Indians of the *Altiplano* (the high plateau ranging from perhaps 9,000 to 12,000 ft. in altitude) live on a very meager diet. The potato, which is native to Peru, is small and hard and, in the high altitudes, is very difficult to grow and cook. Cereal crops are sparse and carefully gathered by hand. On the other hand, the lush jungle area of these three countries, the *Oriente*, has great potential for the development of food resources, but the only food which I actually saw being transported to the Altiplano was bananas. Cattle ranching projects have been started in several of the jungle areas, to the east of the Altiplano and, because no refrigeration is available, the meat is flown from the ranch to the city.

Many of you know of the nutrition program being carried on by the WHO and the Pan American Sanitary Bureau at the Institute of Nutrition of Central America and Panama in Guatemala (INCAP) (2). About to enter its fifth year of service, INCAP has done much to provide nutritional information in all of the countries of Central America. Nutritional and dietary surveys have been carried on in many areas. Such extensive analyses of food—raw, cooked, and processed—have been made that a great mass of information is now becoming available to the workers in those countries—information about the foods which are actually available in quantity for the people.

The annual report of WHO for 1952 (3) calls attention to the fact that its efforts in nutrition are still chiefly directed against a syndrome due to protein deficiency and most commonly found in infancy and early childhood. This condition, known by many names, is the primary nutritional problem in all of the so-called underdeveloped countries, because there just isn't enough food and more particularly, there just isn't enough protein to stoke the machine known as the human body.

Therefore, in countries where animal proteins, because of their high cost, cannot be made immediately available, it is particularly important that careful studies of plant proteins be made so that those foods best suited to supplying protein and thus correcting deficiencies may be made available in greater quantities. INCAP, assisted by the Kellogg Foundation, the Massachusetts Institute of Technology, and many other organizations, is doing much to develop additional sources of better protein in Latin America.

The laboratories and field-coordinated studies operated by the Institute of Inter-American Affairs in the three countries already mentioned—Colombia, Ecuador, and Peru—are also engaged in developing for these countries and their neighbors a fund of similar information.

PERSONNEL AND TRAINING FACILITIES

In almost every area where public health and medical services are carried on, both in the United States and in other countries, there are shortages of some types of personnel. Latin America is no exception. Every organization working in Latin America, including the WHO, the Rockefeller Foundation, the Kellogg Foundation, and the Institute of Inter-American Affairs, has given consideration to the solution of this problem.

Schools of public health have been developed in several of the Latin American countries—at São Paulo, Brazil; Santiago, Chile; Lima, Peru; and Mexico City. All of these schools have received assistance from the Institute of Inter-American Affairs in several ways. In some instances, buildings have been provided; in others, funds for hiring teachers have been made available. The Institute has sent nationals from the Latin American countries to these schools as well as to schools in the United States for postgraduate study in public health. In fact, The fellowship program, first proved by the Rockefeller Foundation during the forty years of its operation, has been carried on enthusiastically by both the WHO and the Institute of Inter-American Affairs. More recently, the Kellogg Foundation has given particular consideration to the training of health workers in Latin America.

The development of schools of nursing has also been an important activity of the Institute. Here, as with schools of public health, the initial impetus came from the Rockefeller Foundation through assistance in the development of the School of Nursing and the School of Public Health at São Paulo, Brazil. The twelve years of the life of the Institute have seen a great impetus to the development of schools of nursing in most of the countries in Latin America; but the number of trained hospital and public health nurses still is not sufficient to meet the demand of the developing public health and medical programs. It has, therefore, been necessary to train practical nurses to assist in the hospital and health center work and *visitadores* to assist the trained public health nurse in her visits to the families receiving services at the health center.

The nurse, who was a member of our survey team, believes that the *visitadores* are filling a great need, and in the report, which will soon be published, it is recommended that the *visitadores* be used until sufficient public health nurses can be trained.

The training of engineers and sanitarians has also developed in the past twelve years, both in the schools of public health and in special schools of sanitary engineering. In Mexico City, for example, these health workers are being trained in a School of Sanitary Engineering, whereas in other countries engineers are trained in schools of public health.

Here, again, the need for workers has been so great that individuals with a few months' field training as sanitary inspectors have been used in many of the countries to augment the services of the trained engineers and sanitarians. The engineering member of our evaluation team was of the strong opinion that sanitary engineers must direct sanitation services but that a great deal of the sanitation work in Latin America, as in this country, must be carried out by sanitarians with a reasonable amount of training. In the interim, partially trained sanitary inspectors are being used profitably in many countires.

CONCLUSIONS

Is the Technical Assistance program valuable in the development of the so-called "underdeveloped" countries, and does it help to overcome to some extent the poverty, sickness, and despair which exist in spite of the best efforts of the leaders of these countries?

Dr. C.-E. A. Winslow in his book, *The Cost of Sickness and the Price of Health*, published by WHO (4), answers these questions clearly, concisely, and in the affirmative.

He shows that, whether it be in the United States or in any other country, premature death is an economic burden on the family, the community, and the country. He estimates the cost of physical and mental disability and shows conclusively that prevention is better and cheaper, but that it cannot be obtained without cost. He shows what these costs are for what we describe as preventive services and services for the sick.

Finally, he warns that we cannot, that we must not, be frightened because public health and medical care programs result in an increase of the population. A greater rate of increase can be sustained if we can at the same time get rid of the drag of a sick population.

The potential food supply of the world is not a fixed quantity. The process of erosion can be checked if well, strong men and machines are available. Irrigation can turn deserts into fertile fields. Improved methods of agriculture can increase the yield of crops in many countries; roads and transportation facilities can distribute foods more efficiently; and finally, increased prosperity is often accompanied by a lower human reproductive rate; and for these and other reasons, the fear of overpopulation offers no valid grounds for modifying the responsibility of public health workers for the control of preventable disease.

Our evaluation team found that most of the North American personnel were imbued with these principles. In Latin America this group is small compared to the number of nationals who work with them—a ratio of approximately 100 to 6000. What were their relations? In only a few instances did we find an attitude on the part of the personnel from the north expressed by the words, "We'll soon teach them." In almost every case, there was a true partnership with the professional personnel of the various countries who have a great advantage in program planning because of their knowledge of the people and their reactions, and they were rarely lacking in technical competence.

Our professional personnel are generally of high caliber and recognize that their greatest contribution can usually be made in backing up the national leaders with the prestige of the bilateral organizations (the *Servicio*). This, I believe, is the principal reason that countries such as Brazil and Venezuela which now contribute practically all of the funds for the program find it advantageous to continue the work of the *Servicio* in partnership with the United States.

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Pectin Gels without Sugar

"Low-methoxyl pectin," which is regular pectin with its chemical architecture manipulated during processing, was described by Dr. Glenn H. Joseph, Sunkist Growers Research Laboratory, at the 123rd national meeting of the American Chemical Society in Los Angeles. "This newcomer makes aspic and dessert gels without relying on sugar. It is the secret behind the canned tomato aspics now on grocers' shelves, and it is also helping make jam-like fruit products for patients with diabetes.

"Pectic substances have been components of the human diet since man's first meal of fruits. However, it is only in the last few decades that the food industries have learned how to improve a wide variety of prepared foods by adding pectic substances."

The *Journal* presents this historical study in the field of dietetics, not only because of its intrinsic interest to members of the profession, but also because it has been prepared by one who has herself made dietetic history. As supervising dietitian in the Office of the Surgeon General of the U.S. Army during World War I, Lenna F. Cooper was the first to direct the work of the dietitian in war service. As co-founder of The American Dietetic Association in 1917, her name is stamped indelibly on the professional progress of the then-new occupation for women. Through the years, her leadership in the field has continued. In 1937–38, she served the Association as President. In 1947, she received an honorary degree of Doctor of Science from Drexel Institute of Technology, and in 1951, she was awarded the Association's highest recognition, the Marjorie Hulsizer Copher Award. Her publications include *Nutrition in Health and Disease*, which is now in its twelfth edition, and of which she is co-author.

Florence Nightingale's Contribution to Dietetics

LENNA F. COOPER[1]

FLORENCE Nightingale's contribution to modern nursing, hospital administration, sanitation, public health, and education is recognized, but her efforts in matters pertaining to dietetics are not so well known. One of the earliest definitions of dietetics appeared in Hooper and Akerly's Medical Dictionary in 1847 where it was defined as a "branch of medicine" (1). At that time there were no known practicing dietitians. Dietetics is now defined (2) as "the science and art dealing with the application of principles of nutrition to the feeding of individuals or groups." It is also still listed as one of the medical professions in the National Roster of Scientific and Specialized Personnel of the U. S. Department of Labor's Employment Service. From the beginning of the medical profession, food has always had a place in the treatment of disease, although for centuries the knowledge was meager.

Though Florence Nightingale agreed that the physician should prescribe the food for the patient, she considered that the science and art of feeding the sick was an essential part of nursing. In her reorganization of nursing she, therefore, placed great emphasis on the selection and service of food, and in all her plans for hospital reorganization, the food service was placed under the nurse-matron where it remained in Britain until very recent times.

[1] The author is indebted to Isabel M. Stewart, Professor Emeritus of Nursing Education, Teachers College, Columbia University, for her help and guidance in obtaining the information in this paper, most of which was found in the Adelaide Nutting Collection of the Teachers College Library.

Miss Nightingale herself was exceptionally well prepared to administer hospital food services, having acquired much information about food, chemistry, and related subjects chiefly from her own reading and study, but supplemented by wide observation and experience not only in her own home but in visits to continental hospitals, schools, and other institutions. Miss Nightingale, however, was known to have consulted specialists in all lines of work which had a bearing on her special interests. Many are quoted in her writings. She also obtained dietaries and record forms from various hospitals in England and on the Continent. Her chief counselor in dietary matters was Dr. Christison (Sir Robert) of Edinburgh, who was a famous professor of medicine in some of the leading medical schools of Europe. Her mother, like other English ladies of her time, made it her duty to visit the sick and needy within her parish regularly. Her daughter, Florence, accompanied her as a part of her education and in this way learned much about the food habits and living conditions of the laity. She also had a period of training at the Deaconess Institute at Kaiserworth on the Rhine. Shortly thereafter, she shocked her family and friends when she accepted the position of Superintendent of the Establishment for Gentlewomen during Illness, a private hospital in London. (Nursing at that time was not generally deemed suitable for gentlewomen.) Among other duties, she had full charge of the buying and preparation of food.

THE CRIMEAN WAR

After a year of experience in this London institution, her work there was interrupted by the outbreak

of the Crimean War in which Britain had become involved. News from the war front came through a letter to the *Times* in London stating that there was not only a lack of supplies in the military hospitals but a shortage of surgeons and "no nurses at all." The human cry was soon heard all over the country: "Why have we no Sisters of Charity?"

Within a few days, Miss Nightingale had volunteered and simultaneously had been approached by many important persons, including the Secretary of War, who felt her to be the person best fitted to organize a nursing service for overseas. She began making plans immediately. She received her official appointment and instructions from the War Office making her "Superintendent of the Female Nursing Establishment in the English General Military Hospitals in Turkey." Within two days after receiving her official instructions, she and thirty-eight nurses, some of whom were religious sisters and others ordinary servants but all of whom she had previously recruited from the nearby hospitals, left London for Scutari where they arrived on November 4, 1854.

When she arrived at the Barrack Hospital in Scutari, she was appalled by the unsanitary conditions and the lack of facilities for caring for the sick (3). Soldiers were lying on cots in corridors and elsewhere, the sick and wounded occupying 3 to 4 mi. of space.

The kitchen intended to supply these hundreds of men was at the extreme end of the hospital. All of the cooking was done in thirteen so-called "coppers" (large copper kettles). Five of these coppers, however, were out of order. It took from 3 to 4 hr. to serve a regular meal, and often the patients would receive only two meals a day, which consisted of the regular salt meat boiled in canvas sacks together with what vegetables were available. Transportation to the wards was by trucks. There were no light foods, such as gruel, beef tea, sago, arrowroot, lemonade, or rice pudding, which was the usual fare in civilian hospitals for the critically ill. "Immediately on the arrival of the Nurses at Scutari, in November, 1854, extra diets were prepared by them for these patients, in the stoves which they had brought with them; and within a week a separate Kitchen was established adjoining their quarters" (4).

Miss Nightingale, however, was deeply impressed by the need for additional facilities for preparing foods not only for the regular diet but also for "extra" diets for the very sick patients. She went to work to obtain some smaller boilers and other equipment for two "Extra Diet Kitchens" to be located in different parts of the building. Within two days these were established and were entirely under the control of the nurses. In addition to the two Extra Diet Kitchens, she also had a third one with three supplementary boilers established on a staircase for the preparation of arrowroot and other liquid foods.

She was also confronted with another very serious situation because some of the supplies, including foods, had gone to wrong ports where they remained indefinitely; other shipments were buried under shells, cannons, and ammunition in the holds of vessels. It took quite a bit of maneuvering for Miss Nightingale to convince the military men that food was more urgently needed than ammunition. She finally bought food out of her own private funds after which the supplies came according to schedule.

Dr. Charles Shrimpton (5), Surgeon Major of the French Army, explains some of the difficulties Miss Nightingale had, as follows: "The presence of Miss Nightingale and her companions had, in some measure, the appearance of a reproach to the way things were going on in the Hospital, so that they were looked on at first with a certain degree of uneasiness and distrust. . . It required, in fact, the greatest tact and prudence on their part to obtain the confidence, and gradually to conciliate the good will of every one. . . Miss Nightingale, who was . . . much experienced in such matters saw her way immediately through these first difficulties. There was plenty to be done without interfering with anyone.

"Miss Nightingale gained an immense ascendancy, which allowed her the free exercise of her powerful mind in carrying out the most important measures for the health and comfort of the sick. . . It is curious to observe how rapidly Miss Nightingale overcame all the difficulties and embarrassments she had to encounter on her first arrival at Scutari. Her independent authority was preserved from the beginning by the careful avoidance of all discussions, and by the prompt measures which she took to supply deficiencies without clashing with any other authority."

After a few months, a French chef from England, Alexis Soyer, volunteered his services to help with the general production of food and the installation of suitable equipment in the general kitchen, all of which was of great help (6) and much appreciated by Miss Nightingale. By this time it was evident that the hospitals on the Crimean Peninsula were in the same condition as the Barrack Hospital had been when Miss Nightingale arrived at Scutari. Accompanied by Mr. Soyer, she went to Balaclava on the Peninsula, and together they soon had brought about the same sort of improvement as at Scutari, including the installation of special equipment and new methods of cooking in the general kitchens. Diet kitchens were also established for the preparation of special diets for the very sick patients.

REPORTS ON THE WAR

Miss Nightingale made her last trip to the hospitals of the Crimea in March 1856, where she remained until July, although peace had been declared on March 30. Even so, her work was not finished. Much remained to be done in winding up the affairs

of her mission. She then spent the month of July in Scutari, leaving for England on the twenty-eighth of July and arriving in London on August 4. She went immediately to her childhood country home at Lea Hurst, where she hoped she might rest and remain in seclusion for at least sufficient time to recuperate from her duties in the East, but she could not forget the terrible suffering she had witnessed.

Within a month after her arrival at Lea Hurst, the Secretary of War, Sir Sidney Herbert, who had been her friend for many years, met with her to discuss the subject of army reform which she felt must be accomplished. "She had seen 4600 soldiers die. And as she studied the figures, the conclusion was irresistibly borne in upon her that the greater number need not to have died at all. Many of the diseases to which they had succumbed were induced, and others aggravated, in the hospitals themselves" (7). With the help of the statistician in the Registrar-General's office, she compared the death rate in the British Barracks with the mortality tables in civil life and found that in the Army barracks the mortality was nearly double that in civil life. She showed also that during the first seven months of the Crimean campaign, the mortality among the troops was 60 per cent per annum from disease alone, while during the last five months of the war, due to the improved food and sanitary conditions of the Army facilities, the mortality was only two-thirds of what it was among the troops at home (7).

"It was obvious from this comparison," writes her biographer (7), "that the mortality during the first period was largely preventable. . . It was the most complete experiment ever made in army hygiene." Miss Nightingale further comments (8) upon the Crimean situation as "the finest experiment modern history has seen upon a large scale, viz., as to what given number may be put to death at will by the sole agency of bad food and bad air."

RECOMMENDATIONS TO THE QUEEN

Shortly after her arrival at Lea Hurst, Miss Nightingale received an invitation from a friend, who was also the Queen's physician, to spend a month in Scotland. He informed her that the Queen (Victoria) and the Prince would undoubtedly invite her to confer with them, which they did. This gave her an opportunity to inform them of her experiences and what she had seen of the soldier's sufferings, also the difficulties of obtaining supplies, equipment, food, and other necessities. She had also prepared herself by statistics, notes, and memoranda as well as letters from well informed friends. One of these letters was from an officer in the War Department suggesting that a Commission be appointed to "enquire into the existing Regulations for Hospital Administration."

Miss Nightingale had already decided that if her report and suggestions met with their approval, she would offer to embody them in a written report and that she would also suggest that for the sake of the soldiers, a Royal Commission be appointed to inquire into the conditions of the barracks, hospitals, and the whole Army Medical Department.

The Queen realized that only the ministers could function in such a capacity. Fortunately the Minister of War was due at her residence at Balmoral soon, so another conference was planned, at which time Miss Nightingale was to make a full report to him in the presence of the Queen and Prince. Lord Panmure, the Minister of War, seemed very favorable to her suggestions for the use of the government. Another meeting was planned to be held in London in November. In the meantime, Miss Nightingale was busily engaged in making a list of names whom she thought most desirable for appointment on the Commission, subject, of course, to the approval of the Secretary of War and the Queen. She also drew up a set of proposed instructions for the Commission and likewise prepared her written report as requested for the Minister of War. The report was entitled *Notes on Matters Affecting the Health, Efficiency, and Hospital Administration of the British Army* (4). It was not published by the government, but Miss Nightingale had some copies printed for her friends and other influential people. (It is today a rare book and obtainable in only a few libraries.) When compared with the Report of the Commission, it was evident that her *Notes* made a deep impression upon the Commission.

It is interesting to note that of the eighteen sections of her *Notes* which she sent to the Commission, two pertained to "Notes on the Dieting and Cooking of the Army" and "Notes on the Functions of the Commissariat in connection with the Supply of Food for the Army." Under these headings she comments: "The cooking for the Army has not advanced with the requirements of the times, in the art of preparing the greatest variety and best combination of the most nourishing food with rapidity and simplicity.

"The practice of men cooking individually was pursued in the Regiments of the Line from the landing in the Crimea up to about the beginning of January 1855, or when the camp-kettles, thrown away, had to be replaced. After that period, it seems to have been the practice to tell off two company men to cook. . . The cooks appear to have been without the slightest instruction."

She also comments on another problem that has ever since been a matter of discussion among dietitians: "In July, 1855, these Extra Diet Kitchens were closed, in consequence of M. Soyer having organized the cooking of Extra Diets in the General Kitchen, with all necessary appurtenances. . . It was, however, at least in the Barrack Hospital, never found to work so well to have the extras cooked in the same Kitchen as the general diets." A few years later, however, in her *Subsidiary Notes* (9), she ex-

pressed a different opinion. In discussing the Extra Diet Kitchens, she stated that it is necessary for them to be under a separate roof from the General Kitchens as long as the present system (or no system) of cooking exists. "But the sooner it is altered, the better. There should be one kitchen only."

Miss Nightingale was equally interested in organization and management as in nutrition, realizing that they were necessary tools in the production and distribution of food to the patients. Again she comments: "The method of distribution of both ordinary and extra diets were very inadequate . . . meat was taken to the wards by the orderlies and there divided and taken to each patient. It was almost always cold due to the time required to get it to the patient after it left the kitchen."

In Section VIII of her *Notes on Matters Affecting the Health, Efficiency, and Hospital Administration of the British Army*, Miss Nightingale describes the organizational structure of the hospital kitchen as follows: "The Kitchen illustrates the conflicting powers of Departments: the Commandant assigns the orderlies to the wards, who fetch the diets, and the cook, who cooks them; the Medical Officer determines the diet; the Engineer maintains the kitchen in a sufficient state of repair; the Purveyor supplies the food, part of which he obtained from the Contractor as he does the fuel. The Commissariat through the Contractor supplies the fuel, bread, and meat; the soldier himself supplies some of the utensils necessary for eating."

She further explains in Section XV of the same report that investigation on the part of the Commission showed very clearly that the inadequacy of the diets in the military hospitals was due almost entirely to poor organization and incompetency of the Commissariat which was responsible for supplying (a) meat, fresh or salt; (b) bread or biscuit; also (c) the carriage, distribution, and cooking of the food. Salt meat and hard biscuit were the chief components of the diet. Scorbutic type of disease predominated up to March 1855. Lime juice remained in storage for seven weeks before it was issued to the Army. Fresh meat could have been obtained; also soft bread and fresh vegetables. "The whole dietetic system pursued in the Army was bad. In fact, it was nothing but the merest haphazard. The result was inevitable after these conditions had been permitted to exist."

INSTRUCTIONS ON FEEDING THE SICK

Miss Nightingale's lifelong objective was the training of women in the care of the sick but because of ill health she was not able to do classroom teaching. She had all available information on the subject and contributed extensively by writing. One of her first books was *Notes on Nursing* (10), published in 1859. Of the fourteen chapters, two are on food. In Chapter VI, "Taking Food," information is given as to the difference in food requirements between the acute patients and those of the chronic type. She also warns: "Never let a patient have 'something always standing' by him," also that the "patient had better not see more food than his own," although she recognizes the fact that "in hospital wards it is of course impossible to observe all this." She further warns, "You cannot be too careful as to quality in sick diet."

In Chapter VII, "What Food," she discusses various foods and their importance in feeding the sick. In commenting on meat without vegetables, she calls attention to a fairly new discovery that "scorbutic sores have been actually known to appear among sick persons living in the midst of plenty in England, which could be traced to no other source than this, viz.: that the nurse, depending on meat alone, had allowed the patient to be without vegetables for a considerable time, these latter being so badly cooked that he always left them untouched."

In commenting on milk she states that "milk and the preparations from milk, are a most important article of food for the sick . . . there is nearly as much nourishment in half a pint of milk as there is in a quarter of a lb. of meat."

Miss Nightingale warns the reader that observation of the patient, not chemistry, must decide the sick diet for "chemistry has as yet afforded little insight into the dieting of the sick. All that chemistry can tell us is the amount of 'carboniferous' or 'nitrogenous' elements discoverable in different dietetic articles." She thus gives a picture of the paucity of information that was available one hundred years ago. She also warns the nurse that "incomparably the most important office of the nurse, after she has taken care of the patient's air [through proper ventilation], is to take care to observe the effect of his food, and report it to the medical attendant. It is quite incalculable the good that would certainly come from such *sound* and close observation in this almost neglected branch of nursing, or the help it would give to the medical man." It is interesting to note that about twenty years later, 1874, the first medical textbook in English entitled *A Treatise on Food and Dietetics* was written by Pavy (11).

In still another chapter in her *Notes on Nursing*, titled "Observation of the Sick," Miss Nightingale again points to the importance of carefully observing the patient's eating habits, his desires, and his dislikes, and the effect of appetite on digestion. She enumerates four conditions which may cause a lack of appetite, as follows:

"1. Defect in cooking;
"2. Defect in choice of diet;
"3. Defect in choice of hours for taking diet;
"4. Defect of appetite in patient."

Notes on Nursing (10) proved to be a "best seller," 15,000 copies being sold within a month after publication, and a cheaper edition quickly followed. Likewise, several other editions were published. It was

popular among all groups. In the same year, 1859, she also published *Notes on Hospitals* (12). Much of this book was devoted to the "Sanitary Condition of Hospitals" and to hospital construction. In writing of "Defective Hospital Kitchens," she emphasizes:

"1. The necessity for variety in food as an essential element in health, owing to the number of materials required to restore and preserve the human frame. . .

"2. The importance of cooking so as to secure the greatest digestibility and the greatest economy in nutritive value of food. . . I have often been surprised by the primitive kitchens of some of our civil hospitals, with which little variety of cooking is possible. It shows how little diet and cooking are yet thought of as sanitary and curative agents."

Dr. Shrimpton in his book on *The British Army and Miss Nightingale* (5) comments favorably on both of the above books. Of *Notes on Hospitals*, he writes: "This is a most practical, scientific work on the construction, management, and administration of Hospitals . . . indispensable to all persons who require information on the subject."

He values *Notes on Nursing* as "one of the most useful books that could have been published. . . The *Lancet* announced this book as a remarkable publication, an interesting study for physicians and surgeons, a homily for women, and a guide for nurses. The *Medical Times* said, 'No one but Miss Nightingale could have written such a book as the one we have before us on nursing.' "

Another booklet, entitled *Health Teaching in Towns and Villages. Rural Hygiene* (13), also written by Miss Nightingale, gives some instruction on "Food, Digestion, and How to Nourish the Body."

MISS NIGHTINGALE AS A CONSULTANT

She was a voluminous writer, considering her semi-invalid condition of health. Her writings included several books, reports to committees or commissions, and papers read before organizations. It is evident from the subjects of her papers that she was well versed not only in nursing and dietetics as of that date, but in all phases of hospital administration as well. She was also keenly interested in statistics and was elected to the Statistical Society as well. She used this knowledge as a means of detecting and evaluating the efficacy of planning, construction, and sanitation of hospitals and committees. Her advice was sought by many government officials including men from foreign countries. Her door was always open to nurses, doctors, and hospital administrators.

She was even called upon by the U. S. Secretary of War in Washington when the Civil War broke out in 1861. He requested forms and reports, statistical and otherwise. Much correspondence followed. Following Miss Nightingale's example, the Woman's Central Association of Relief of New York petitioned the Secretary of War to appoint a Sanitary Commission, which was done. "Camps were inspected; female nurses were sent to the hospitals; contrivances for improved cooking were supplied, and in short much of Miss Nightingale's Crimean work was reproduced" (7).

One of our Army captains connected with the Commissariat sent her a draft of instructions for her suggestions and comments. Her reply stated, "We have gone over your draft very carefully and find that although it includes almost everything necessary, it does not define with sufficient precision the manner in which the meat is to get from the Commissariat into the soldier's kettle." Sir Edward Cook appropriately comments (7), "A great Commander was lost to her country when Florence Nightingale was born a woman."

INTEREST IN SANITATION

Sanitation is another subject on which she wrote many articles. Her advice on this subject saved many lives, especially in the Army hospitals both during and after the Crimean War. When the war was over and she returned to England, she investigated the sanitary conditions of the Army barracks and hospitals comparing their mortality rates with those in the civilian population. As mentioned earlier, the study showed that the mortality was almost double that of the civilian population. She was resolved, therefore, to press home the lessons learned in the Crimean War with a view to preventing such terrible conditions in the future.

Miss Nightingale also became greatly interested in similar unsanitary conditions in India and devoted much of her time in trying to influence government officials and public opinion on the importance of correcting them.

A Royal Commission on the Sanitary State of the Army in India was ordered by the Queen in 1859 and was completed in 1863, the report consisting of two very large volumes. The evidence presented was sent to Miss Nightingale for her opinion as to the sanitary state of the stations of the Army in India. Her "valuable paper of comments contributed at the request of the Commission" was published as a part of the report and later reprinted separately (14). It covered various phases of sanitation, disease, statistics, and, of course, food. Again she emphasized the importance of proper diet for the soldier on military duty in the following paragraphs:

"It appears extraordinary to give the soldier the same amount and quality of diet in all seasons, in tropical as in temperate climates. And yet every day the soldier has 1 lb. animal food, 1 lb. bread, 1 lb. vegetables, 4 oz. rice, tea or coffee, and sugar, besides his spirits and beer, and any amount of extra animal food he may buy for breakfast and tea. Of all

countries India is the one where men cannot be dieted the whole year round by the same rule without mischief. But only a few enlightened men appear to have any idea of what effect this extraordinary system of dietetics has on the soldier's health.

"Surely we have sufficient knowledge of dietetics to be able now-a-days to vary our diet to suit climates and seasons, and to know that we cannot eat everything everywhere. Sir John Lawrence says in his evidence that Government 'might try to induce the men, by varying the ration with references to hot and cold weather to take more to vegetable diet.'

"The means of cooking are of the rudest order . . . often far from clean, is the regimental kitchen. As for boilers and ovens, considered indispensable at home, there are none . . . there is very good authority for stating that the food is imperfectly cooked, or served up in a way which destroys the digestive organs, and leads to the use of stimulants to promote digestion."

After ten years of work on the Indian project, she found that the death rate of the Army in India had been brought down from 69 per thousand to 18 which, of course, compensated her for her arduous work on behalf of the British Army in India and the inhabitants of the country.

MISS NIGHTINGALE'S PLACE IN DIETETICS

The life of Florence Nightingale has indeed been an inspiration to the women of the past century. Not only did she open the door for professionally trained nurses in the hospital field, but for other professions as well. This applies particularly to the profession of dietetics, for which she laid an excellent foundation in her continued emphasis on the importance of properly chosen and well prepared food as a factor in the treatment of the sick. A movement began in this country about 1890 in some of the eastern hospitals to have a woman specially trained in foods and food preparation to preside over the special diet kitchen—at first to teach the nurses how to prepare foods for the sick. Just when the word "dietitian," was first applied to this type of food specialist is not known, but it must have developed within the next ten years. As early as 1901, Adelaide Nutting (15), Superintendent of Nurses, Johns Hopkins Hospital, gave an excellent presentation before a group of home economics (also called "domestic science") teachers on the need for such teachers in the school for nurses. In 1903, the need for practical experience as a part of the training was recognized and the first student dietitian was appointed to work for the period of three months with the Department of Public Charities, New York City. In 1906 there appeared on the program of the Lake Placid Conference (16), the forerunner of the American Home Economics Association—the subject "The Dietitian, Need of, and Training."

By 1917, the United States became involved in World War I and, because of the need of our Army abroad, food conservation was stressed throughout the land. Dietitians became conscious of their responsibility in this program and a conference was called at which time it was decided to organize. Thus The American Dietetic Association came into existence with fifty-eight members, and a new member was born into the family of the medical professions in the United States, fifty-seven years after the Florence Nightingale Training School for professional nurses was started in London.

It must be evident that Florence Nightingale's recognition of the importance of proper food and diets in the care of the sick gave great impetus to the development of this new profession which now in thirty-seven years has a membership of more than 10,000 in the United States. Miss Nightingale has, indeed, been a "light unto our feet."

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Sugar Synthesis Achieved

Two young chemists from Canada's National Research Council have conquered the "Mount Everest" of carbohydrate chemistry—the synthesis of sugar. The feat of Drs. Raymond U. Lemieux and George Huber was reported at the American Chemical Society's 124th national meeting in September. The chemists reported that they obtained unequivocal proof of the production in their laboratory of sucrose (common sugar) in pure crystalline form, although only a fraction of an ounce has been synthesized thus far.

This achievement is an indirect result of fundamental research which the scientists were conducting on the chemical properties of sugars. Before attacking the sucrose problem, Dr. Lemieux successfully tested a working hypothesis on another goal in carbohydrate chemistry, the synthesis of malt sugar (maltose). Synthesis of maltose and glucose has been difficult because, in each case, a glucose molecule must be attached to another substance in a certain configuration.

A derivative of glucose was first treated with a derivative of fructose. Initial attempts to have the substances interact to form a sugar derivative convertible to sugar itself were unsuccessful. However, through refinements in technique, Drs. Lemieux and Huber obtained a mixture of chemicals appearing to contain sucrose. Although isolation of the sucrose from the complex mixture proved a major problem, by the latter part of June it was accomplished.

In the course of the experiments, a third sugar was also synthesized for the first time. This substance, known as trehalose, occurs in some plants. The work was performed in collaboration with Dr. Herbert F. Bauer of Austria.

Despite the lack of commercial use (sugar is the most abundant compound produced in pure form and one of the cheapest chemicals), the synthesis of sugar represents a significant advance in the understanding of certain basic chemical properties of the central compound in nature. This achievement has been termed, by the American Chemical Society, one of the ten top achievements in chemistry and chemical engineering in 1953.

Memorial to Beaumont

A permanent memorial to William Beaumont, the young Army surgeon turned nutrition researcher, was dedicated last July 17, when a cornerstone was laid for the new Beaumont Memorial on Mackinac Island. The memorial, complete with a reconstructed trading post, will be on the spot where, 131 years ago, Dr. Beaumont made medical history with his "open window" patient, Alexis St. Martin, the victim of a shotgun discharge which left a hole in his stomach.

Although Beaumont was able to save the patient's life, he was unable to close the hole. Therefore, through this "window," Beaumont studied in detail the digestion of all types of food and the effects of alcohol and emotions on digestion. His findings have since been corroborated by X-rays and other laboratory apparatus.

Dr. W. S. Jones, Chairman of the Beaumont Memorial Working Committee of the Michigan Medical Society, presided at the ceremony. The stone was laid by: Dr. R. J. Hubbell, President, Michigan Medical Society; W. F. Doyle, Chairman, Mackinac Island Commission; and Dr. Otto G. Beck, head of the memorial fund drive.

The Michigan Medical Society expects to spend $40,000, contributed by Michigan physicians, on the memorial. When completed, it will be presented to the Mackinac Island Commission as a permanent tribute to the famous doctor and his patient.—*Contributed by Mary I. Barber, Home Economics Consultant, Battle Creek, Michigan.*

Principles and Policies of Personnel Management[1]

MALCOLM MACURDA

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IN THE eighteenth chapter of Exodus, starting with the seventeenth verse, Moses' father-in-law criticized him for attempting to make all the decisions his people demanded of their leader. His advice to Moses was to select men with truth to be rulers of thousands, others to rule hundreds, and still many more to rule tens. Then he significantly said, they are to judge the "small matters" and are to bring the "hard causes" to you for your final decision. Thus, even in Biblical days the problems of organization and delegation of responsibility were known and recognized. And today, we in management in the industrial world accept and utilize these principles, coupled with something we call personnel policies, industrial relations, or perhaps just "company policy." Regardless, therefore, of how well our "family tree" is organized in terms of thousands, hundreds, or tens, this other ingredient is necessary. Whatever its name, it is my purpose in this paper to examine more fully this integral part in the scheme of things which is so necessary in the successful handling of groups of people drawn together in a common work situation.

There are two general areas that require attention. First, the total management climate must provide a well defined, humanitarian and personnel policy under which the lower levels of supervision can work in a compatible, understanding manner. The second general area concerns the actual carrying out or execution of these philosophies by the management person directly responsible for the guidance and direction of the employees doing the job.

OVER-ALL MANAGEMENT CLIMATE

Primarily, any business organization should in itself possess a dignity. Webster defines dignity as "elevation of character; intrinsic worth; excellence or stateliness." Nothing should be formulated into policies or rules of conduct that would lower the respect or esteem held by its employees in regard to the wisdom and direction of top management leadership. There is nothing more disturbing to morale than for employees and supervisors alike to lose confidence in their higher leaders.

Second, the business should possess stability in terms of a sound financial record of success. The workers stand to lose or gain as the business prospers. Next, an organization needs a sound employee promotion policy which has as its basis promotion from within. Certainly such a policy is an encouragement to everyone in the organization and a strong force in constructive motivation to its personnel. Any successful business must perpetuate itself through the selection of competent management personnel. This means also personnel requirements need to be known sufficiently in advance in order to select and train new supervisors as needs develop.

This then brings me to the last general consideration insofar as the top, policy-making levels of any organization are involved—the formation and promulgation of an over-all, well defined, humanitarian and personnel policy which will be the framework under which the lower echelons of supervision will operate. Some of the broader items for inclusion in such a program are:

(a) An appraisal program covering both merit and fault.

(b) A program to keep people informed as to things affecting them as well as the general progress of the company.

(c) The respect of individual dignity and recognition of people as individuals, not as a "mob."

(d) Fair compensation.

(e) Good leadership.

(f) Stability of employment.

(g) Good safe working conditions.

(h) A sound policy of advancement and/or rotation of people to provide opportunity in accordance with ability.

These are obviously general points and embrace a wide area of consideration. Nevertheless, they must be incorporated in some manner into policies,

[1] Presented at the 36th Annual Meeting of The American Dietetic Association in Los Angeles, on August 28, 1953.

rules, regulations, or practices so that each supervisor has a clear understanding of their import and is confident in his ability to carry out his daily management tasks, secure in his knowledge that what he is doing is not in conflict with higher supervision's philosophies and desires in carrying forth the objectives of the business.

Top level policy should center on the most effective utilization of human resources, recognizing that the individual is the basic element in our society and that the survival of our way of life depends on our understanding and use of this principle. This means that all supervisors of the management hierarchy, from top to bottom, should not only understand this principle but must make it a part of their way of life. The challenge to management today rests squarely on our ability to recognize and cope with this basic premise.

PROBLEMS OF THE SUPERVISOR

So much for the general aspects of the situation. Suppose we look at the problems of the immediate first level supervisor and some of his trials and tribulations in the adaptation of such general policies to his own job of supervision. Such questions as:

(a) How far can he deviate from general policy?

(b) Can he build for himself a separate set of personnel policies within the general framework of the over-all company policy? If he does, what are the possible penalties or advantages?

(c) How can he best discharge the general policies without losing his own personality or losing face with his subordinates?

In many instances, these questions pose real problems for the average supervisor. Obviously the assumption must be that he understands the general policies well enough to comprehend thoroughly not only their meaning but the interpretation and intent that lie behind them.

Sometimes the average supervisor feels that his basic job is just to keep anyone from becoming "sore." Many times, of course, a supervisor must stand firm on his convictions as to what is right and consistent with his understanding of the basic policies of his top executives. He cannot be in a position of vacillating in his decision-making. Consistency is certainly a supervisory virtue.

SUPERVISORY PATTERNS OF BEHAVIOR

Most successful supervisors have established for themselves a pattern of conduct or behavior that usually presents a consistent approach to the day-to-day problems. Some of the outward signs of such consistency appear in these forms:

(a) Setting a proper example to his subordinates through his own personal behavior.

(b) Displaying an understanding tolerance toward the shortcomings of others and yet recognizing in the handling of such problems that the situation ultimately must be resolved. Firmness in supervision is still necessary if a segment of our business or company is to be run successfully.

(c) Keeping his people informed, not only as to their individual progress, but also on things of a general nature which affect them. Periodic appraisals or progress reviews are in the first category; in the latter, are the departmental objectives, the reasons for top management actions, or items of general interest about the business.

(d) Being a good listener—listening empathetically and not becoming emotionally involved in the interviewee's problems. This is one certain way of encouraging good upward communication, because it uncovers attitudes, feelings, and emotions of individuals and the group.

(e) Assigning work without discrimination or favoritism.

(f) Utilizing fully the principles of democratic leadership, i.e., encouraging the full participation of both individuals and the group in the job problems and things affecting them.

(g) Comprehending realistically his own area and the limits of authority in his particular position in the management hierarchy.

LEARNING SUPERVISORY CONDUCT

How do such patterns of supervision develop? How does the supervisor acquire skill and finesse in such areas? Whose job is it to train and assist the supervisor in developing his own personnel policies? Probably experience, trial, and error play a major role in such development. Costly at times because of errors, it nevertheless remains the commonest form of learning what and what not to do in terms of effective leadership of people. Perhaps an intuitive sensitivity or awareness of the needs of people on the part of a few supervisors causes them instinctively to do the right thing at the right time. And still a further process sometimes occurs which might be called observation of other successful supervisors—emulation and copying of their patterns of management.

Regardless of these three methods of learning to improve one's leadership techniques, it would appear that some formalized approach to assist both new and old supervisors is almost a necessity. Much has been accomplished in this area today. To succeed in handling people, we must first recognize that today individuals respond far less to fear of authority than formerly and the skilled leader must, therefore, work through the motives of his people. He must satisfy as best he can their wants, needs, and drives by utilizing the incentives which are present in the work situation.

An example of such assistance to management forces has been the widespread introduction of "human relations" training courses on a formalized basis. These programs have endeavored to teach

supervisors the elementary psychologic principles and their applications to the role of leadership. The objectives of such programs have been, of course, to develop within each worker, through the supervisor, the desire to do a good job with its compensating satisfactions. The problem, of course, in such supervisory training is to achieve the acceptance of the principles taught and to motivate the supervisor to use them in his job—in other words, to make it a way of life, to get it into the bloodstream. Basically, it is an attitude problem because, for some reason, human nature being what it is, most of us think that we can effectively supervise other people and no one can tell us how we can improve our leadership. And the older we get, the harder it is to change our habits or attitudes.

There are, of course, countless other formalized approaches to assist supervisors in developing broader leadership concepts. Many universities offer seminars, summer sessions ranging from one to nine weeks in duration, and evening sessions designed to assist management people with their problems of effective leadership. In addition, many private consultants and firms offer their services, while other concerns offer pamphlets, booklets, slogans, and so on designed to assist supervisors to meet their responsibilities.

THE SUPERVISOR'S OWN RESPONSIBILITY

All these things help, but it seems to me that recognition of need for self-development, the acquisition of a sound set of personnel practices, and the development of easy use of these principles rests squarely in the lap of the supervisor. You can be subjected to the finest formalized training program in the world but, like an inoculation, if it doesn't take, nothing has been accomplished. If a person continually finds excuses for not attending training sessions, management is foolish to insist that he be present. He will get nothing from the course and you will "knock yourself out" trying to gain his interest and acceptance. The same principle applies in the matter of self-development. Unless the supervisor wants to improve himself, and this must be a sincere, deeply seated desire, he will never be much of a success. This inner drive, constantly directed toward one's own self-improvement, indicates the supervisor's potentials.

I don't mean to deprecate formal training one iota. However, the greatest development of the individual supervisor must come from within—from his own efforts to want to improve himself. We can help this process along, but the "will to want" cannot be poured in from outside.

ACHIEVING CONSENT FOR AUTHORITY

Thus far we have omitted discussing the most interesting question: how do we acquire skill and finesse in leadership techniques? This is just another way of saying, how do we carry out our personnel relations policies in the light of what higher management desires? Perhaps as the supervisor gains confidence in himself and in his ability to handle people, while at the same time earning the respect and regard of his subordinates for his ability as a leader, he can be encouraged to expand further those traits of leadership which have proved their worth in actual practice.

He has undoubtedly learned by this time that "authority" in any type of organization rests on consent. A basic psychologic premise, which is often overlooked, says, "No person is ever compelled to do anything. His actual performance is always determined by his voluntary choice." To be effective, authority must be accepted. Authority and discipline are necessary in any effective organization which brings together a large number of persons. The improvement in the supervisor's skill is measured by that consent willingly and harmoniously given his authority.

Individuals will cooperate and accept necessary authority in specific instances only if four conditions exist: (a) the individual can and does understand what is desired; (b) at the time of his decision, he believes that the particular request is not inconsistent with his understanding of the purposes of the organization; (c) at the time of his decision, he believes the request to be compatible with his personal interest; and (d) he is able to comply both mentally and physically. Authority sometimes becomes acceptable because the individual on the receiving end simply doesn't care very much about it one way or the other. There exists in every person what has been called a "zone of indifference" within which there will be no conscious questioning of authority. People within an organization exercise a certain stability over this zone of indifference.

The alert supervisor who constantly is seeking ways to improve his managerial skills will see that the four conditions mentioned are normally present. He will also recognize the existence of the so-called "zone of indifference" but will not rest there because good supervision demands more than indifference in the behavior patterns of his subordinates. What is needed is enthusiasm, the building up within the group of that "will to do."

IMPROVING COMMUNICATION

Each supervisor could also further improve his skills and techniques if he constantly tried to improve his communication processes between himself and his people.

In establishing good relationships with employees, some of the communication processes are so obvious that they almost appear ridiculous; yet they are often overlooked or forgotten in the rush of business. Burleigh Gardner in his book *Human Relations in Industry* (1) dwells extensively on the

importance of the man-boss relationship and the dependence of each person on his supervisor for recognition. Dr. Gardner recounts the sensitivity of each subordinate to his boss's moods, opinions, likes, and dislikes and says that everyone below him is constantly trying to anticipate his wishes, trying to read his every word and gesture, and endeavoring to interpret his expressed as well as his unexpressed thoughts. Sometimes he says, the problem of impressing the boss becomes more important than getting the work done.

There are many ways we communicate. By a *nod*, *smile*, or *friendly greeting* we give recognition to our associates; by our *silence*, we tell people a lot; by our *actions*—what we do in a given situation—we communicate, and sometimes by our *inaction*, we clearly delineate a course of action. Then, too, our *lack of decision* when answers should be forthcoming unmistakenly tells our subordinates that we are overlooking a cardinal communication process and are evidencing poor leadership. Coupled with these processes are three further requisites: a sense of *timing*—when communication should be undertaken —the appropriateness of the situation; a *sensitivity* to the needs of one's group for knowledge, information, or clarification; and last, the proper *attitude* of the supervisor in passing along information to his people in a friendly, understanding, and helpful manner.

Improvement in communication skills comes with practice and the desire to want to establish closer bonds of mutual interest and good relationships with the group. It means that common goals or objectives of the group should not only be the combined planning efforts of both the supervisor and his people, but the group's successes and failures in reaching their mutual objectives should be communicated constantly to them by means of a free and open pipe line. This means communication in terms of the group's situation, background, and most important, self-interest. The supervisor may be superior to the worker in the organizational hierarchy, but as individuals they stand equal. We can't afford to "talk down" to the worker.

Then, too, communication will tend to lose effectiveness unless it accurately corresponds with fact. The supervisor who says one thing but does another will soon find that he is not being heard, regardless of how skilled he is with speech or pen. He should remember the old proverb, "actions speak louder than words."

Variety needs to be introduced into any communication. If the same greeting is given by the supervisor every morning for a year and if the same safety poster hangs on the same bulletin board for six months, they lose their meaning. New ways make impressions; for example, a lighthouse keeper was awakened, not by the sound of the fog horn, but by its silence when it failed. New impressions are especially needed if information is to be retained over a long time, because people tend to forget easily.

Patience will be a virtue to the supervisor who is trying to build good communication, because this takes time. The attitudes and skills which make effective communication possible cannot be built in a week, but they can be improved regularly.

Although the emphasis of this discussion has been on supervisory communication to subordinates, this is but a part of the communication process. Communication in a business flows upward, downward, and in all other directions to form a communication circuit. If this circuit is damaged anywhere, it will affect communication just as an electrical short-circuit affects electrical flow.

TEN PRINCIPLES OF COMMUNICATION

In summary, here are ten good principles which the supervisor can use to improve communication in his department. There are others, but these basic ten provide a good starting point.

(1) A communication should have an objective, which must be determined before the communication takes place.

(2) The supervisor can communicate only what he has received and understood.

(3) Communication should be in words the receiver understands.

(4) Communication should be in terms of the receiver's background and interests.

(5) Reasons should be given for the particular viewpoint or action.

(6) No plan of action is complete unless it has a plan of communication.

(7) Skills in face-to-face communication are most important to the supervisor.

(8) Action speaks louder than words.

(9) Variety improves the effectiveness of communication.

(10) It takes time to build good communication relationships.

The supervisor who practices these principles will go a long way toward developing mutual understanding in his department. If he tries, he can renovate or even rebuild his departmental communication system. Others have done it; so he, too, can learn and practice communication skills. Since he is the key to communication in his work unit, he must ever remember that communication is a continuous process. He needs to communicate regularly. If he uses his communication skills only when he is in trouble, he may find ears turned deaf and information channels dried up because of disuse.

SUMMARY

The general top management area of authority plans the over-all policies of the company. We, as supervisors closer to the work operations, want to

form and discharge our own leadership techniques and skills in such a way as to gain the utmost cooperation within our work group. As Dr. Gardner so aptly phrases it, "a prescription for more effective foremen comprises techniques for 'giving' to his work group enough satisfaction and security, both individually and as a group, that cooperation will follow spontaneously and inevitably." This means giving the group some voice in planning their work, hearing their suggestions, being proud of "the gang" and praising them, and saying "we" instead of "I."

The person who has to do all these things is *you*. No one else can do them. You *are* the company to your people and you represent them to the company. When you carry out these obligations day by day, you can make one simple test of their effectiveness by asking yourself one simple question, "Are my people *lucky* to have me as their supervisor?"

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The Challenge to Dietetics

The great white hope in the field of dietetics today is the potential of human resources in the profession. If you continue to stress the need for the work you do, pass on your experience and knowledge to students, and explore the unknown for new and better methods, you will some day more nearly approach what I should like to believe is the minimum acceptable performance that both the sick and the well deserve in the field of nutrition. When the day comes that your executive ability equals your scientific knowledge, your profession will be secure. Until that day, you will be faced with a constant and unwelcome challenge.

I believe that the profession of dietetics is deficient in the arts and skills of modern management. Such arts and skills can easily be acquired, and every effort should be expended towards their early acquisition. The day is not far off when we shall have dietitians whose science and management will be excelled by no one and whose spiritual motivation will result in an unbounding amount of happiness and satisfaction.

They will have what I term *intra-personal teamwork*. By this I mean, the type of work done by a happy, contented, secure person doing a job she likes and enjoying the experience. Frequently the modern citizen is able to acquire the motions and techniques of an activity without believing in it. He or she does the job by rote: in fact, some people smile the same way. They get some work done, but their soul is pulling one way while the body pulls another. The work never reaches that peak of performance which carries with it a true radiance that blesses the work and also the recipient of the service. We have among us today many people of this type, and surely this is a step forward, since they are better workers than those who don't care and don't care who knows it. Still, let us hope that in the years ahead, by proper counseling, training, and job selection, we shall attract to each profession men and women who are not only well equipped for their job but who will thrill to the opportunities afforded them.—*Anthony J. Rourke, M.D., Executive Director, Hospital Council of Greater New York and Former President, American Hospital Association, speaking before The American Dietetic Association in Los Angeles on August 27, 1953.*

Responsibilities of Professional Organizations

Professional responsibility was "brought home" to members of the National League of Nursing when Dr. Alan Gregg, Vice-President, The Rockefeller Foundation, addressed them at their convention last year.

"Nearly every national organization I know," said Dr. Gregg, "runs the grave risk, by its mere existence, of *relieving* the local membership and its individual members of thinking about problems and opportunities that are nonetheless great because they concern every one of us. I use the word *relieving* purposely. A pickpocket *relieves* you of your purse. When you are being *relieved* of your responsibility, you are being *robbed* of participating."

Dr. Gregg also pointed out the dangers of specialization: "I would like to see all of some thirty-five national organizations in the health field devote one whole day of their annual conventions to lectures and conferences addressed by representatives from other fields than their own in order to combat the isolation brought on by specialization. This isolation has already become a striking feature of the health professions in this country."—*Excerpted from: Nursing Outlook 1: 448 (August), 1953.*

Planning Easier Work[1]

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EACH business or organization has only a limited energy budget in the form of manpower, materials, and equipment to furnish products or services. An *efficient* business demands that more products or services be obtained with the same energy budget and often at a lower cost in money and fatigue.

Outstanding achievements in making the job easier and more satisfying to the employee have been made since the turn of the century. Most significant are the contributions of the Gilbreths through their pursuance of "the one best way" (1). Out of their research has come a body of knowledge which has been the servant of progressive manufacturing businesses for over fifty years.

In recent years hospitals, restaurants, banks, insurance companies, and other service establishments have become increasingly active in applying this knowledge to their activities. Unfortunately there are still many managements which fail to see that many of their problems are comparable to those solved in other industries.

The number of units which an individual can produce in a given time depends on two factors: (a) the method used and (b) the speed at which the individual works in performing the method. There are limitations in many situations which negate the possibilities of increased operator speed. Therefore, emphasis must be placed on planning the method to make it easier and more productive. This is often done through mechanization of jobs which can be more cheaply performed by machine. However, there still remain many jobs which would be uneconomical to mechanize even partially and for which manpower, although expensive, must be used. Investigations of these manual tasks offer tremendous possibilities for savings in dollars and effort with little outlay in money and time.

THE SCIENTIFIC APPROACH

In solving practical operating problems in a working environment, considerable benefit can be derived when procedures such as those used in physics, chemistry, and other research are applied. This procedure has been called the "scientific approach" and forms a framework for study in work simplification. One way of expressing this framework would be as follows:

STEP I. *Write down each activity in the job.*
Prepare a complete and detailed description of the job as it is presently being done, including the use of men, materials, and equipment.

STEP II. *Question each and every activity.*
Why is it necessary?
What is its purpose?
Where should it be done?
When should it be done?
Which materials and equipment should be used?
How should it be done (the "best" way)?
Who should do it?

STEP III. *Devise a better method.*
(a) Eliminate unnecessary activities.
(b) Combine the necessary activities wherever possible.
(c) Rearrange the necessary activities for better sequence.
(d) Simplify these necessary activities.
(e) Work out the improved method with others, especially those now performing the job.
(f) Write up the proposed method.

STEP IV. *Apply and follow up the new method.*
(a) Convince those affected of the need and merit of the new method.
(b) Convince your superior of its practicability and merit.
(c) Obtain the required approvals.
(d) Put the new method to work.
(e) Follow up to see that the method is used or whether it needs revision.
(f) Give credit where credit is due.

Many have found that if the right questions are asked, the solution to a problem may suggest itself. To go back a step further, many find that if the real

[1] Presented at the 36th Annual Meeting of The American Dietetic Association in Los Angeles, on August 26, 1953.

problem is known, the right questions can be asked more easily and the solution more easily found. The scientific approach offers aid toward all of these objectives.

DISTRIBUTION OF WORK LOADS

Recording jobs in a manner which furnishes a basis for analytical interpretation can be done through the use of a "Work Distribution Chart." Such a chart shows for a given period of time—usually a week—the type of work and the approximate time spent on each job by an employee in the department under consideration (*Fig.* 1). It is an aid to proper distribution of the work load and more effective utilization of employees' skills on tasks for which they are best suited.

The chart is easily constructed by heading each column with the name of the employee, and each row with a general heading of an activity performed in the department. Thus, opposite the general activity, "set-up," it might be found that Employee No. 5 spends 2 hr. each week "locking up" the facilities.

Six key questions should be asked when studying this chart. They are:

(a) What activities take the most time?
The totals should reflect the relative importance of these activities and open up areas for future consideration.

(b) Is there any misdirected effort?
Is your department being robbed of important time because of relatively unimportant or unnecessary work?

(c) Are skills being used properly?
Are special skills and abilities being wasted by improper balance between tasks and skills available to perform these tasks? Are employees working below or above their ability?

(d) Are the employees doing too many unrelated tasks?
One of the principal danger signals of unnecessary fatigue and wasted effort is permitting employees to perform too many unrelated tasks, in defiance of a basic management principle.

(e) Are tasks spread too thinly?

WORK DISTRIBUTION CHART — Dormitory kitchen — Hrs. per week

ACTIVITY		A.M. COOK		P.M. COOK		SALAD COOK		POTWASHER		DINING ROOM GIRL	
Set-Up	13	Open refrigerators Turn on ovens Set-up steam table Count out food for next breakfast	2 1 3 2	Close down the steam table	3					Lock up	2
Cleaning	66	Clean steam table (breakfast) Clean steam table (lunch)	2 3	Clean steam table (dinner) Clean work table Put away food.	3 2 2	Clean coffee urn Clean work table & own pots Wipe out refrigerators Clean refrigerators	2 5 3 6	Wash pots & pans Special cleaning duties Sweep dining room & other rooms Mop dining room & other rooms Clean rest rooms	10 4 5 10 4	Clean dining room tables Clean coffee urn after dinner	3 2
Preparation and Cooking	72	Heat water for coffee Cook cereal and other breakfast foods Cook lunch	1 9 8	Cook supper dessert Prepare and cook vegetables & hot food for dinner	7 15	Make coffee, toast & other breakfast materials Prepare luncheon salad Prepare dinner salad	5 8 7	Assist cooks in preparation of foods	4	Assist in vegetable preparation Fill seasoning shakers Make dinner coffee Mix salad dressing	4 1 2 1
Serving	22	Serve breakfast Serve lunch	3 4	Serve dinner	4	Dish-up relishes & spreads	3	Assist in serving dinner	3	Assist serving Serve dinner desserts	2 3
Misc.	0	———		———		———		———		———	
TOTALS	173		33		36		29		10		20

FIG. 1. *Work distribution chart for five workers in dormitory kitchen. Numerals indicate hours per week.*

Allowing too many people to do the same tasks which could be handled by fewer people permits inconsistency, "buck-passing," and needless interruption and cuts down operating effectiveness.

(f) Is work distributed evenly?
The areas of possible overloading and underloading should be marked for further analysis, using some approach to the work-measurement or time-study technique. Balance of work loads is essential for morale and a high productive environment.

PROCESS ANALYSIS

The "Process Chart" is a device for recording compactly the activities of a man, a material, or a system of paper work. By recording them in sequence, better understanding of these activities and their relationship is obtained as well as an excellent basis on which to improve these activities. The observer chooses a subject (either a man, a material, or a form, but only one at a time) and follows it through, charting and describing the activities in the following manner:

- ○ A large circle—represents an action or operation, i.e., typing a food requisition.
- ○ A small circle—represents a transportation, for example, carrying a requisition to a supervisor's desk.
- △ A triangle—represents a storage or delay, i.e., time that a requisition lies on a supervisor's desk for approval.
- □ A square—represents a check or verification, i.e., a requisition is inspected by a supervisor.

By asking questions about each activity, the Process Chart is worked out and can then point the way to eliminating, combining, rearranging, and simplifying a process.

Many improvements can be obtained by the use of the Process Chart alone. However, it is desirable at times, when studying the activities and presenting ideas for improvement, that a "Flow Diagram" be constructed. The relative movement of the employee, material, or form can be depicted in a scaled drawing of the floor plan. The flow lines can be helpful in determining the most effective placement of equipment and facilities, in spotting excess movement, back-tracking, and locating congested areas. Figure 2 shows such a flow diagram applied to salad preparation.

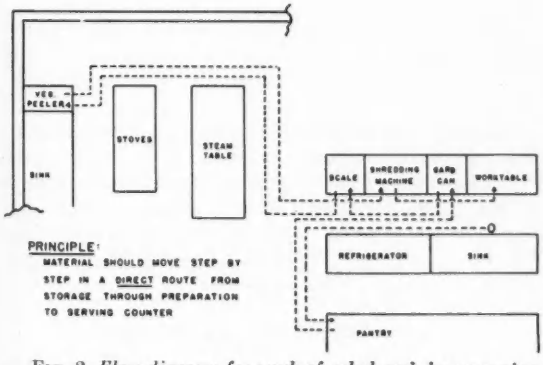

FIG. 2. *Flow diagram for work of salad cook in preparing raw carrot salad*

MAN-MACHINE RELATIONSHIP

When equipment is involved in an operation, it is often desirable to plot the activities of both the man and the machine on an appropriate time scale. The "Activity Chart" provides the observer with an excellent picture of the relationship of the man and the machine or the relationship between the activities of several men. It calls attention to the balance of the activities and idle time.

Most operations consist of three main steps: (a) *get ready*, i.e., putting material into the machine; (b) *do*, for example, setting the machine in operation; and (c) *put away*, i.e., taking the material out of the machine.

Emphasis should be placed on the arrangement of the activities so as to increase the productivity or utilization of the men and the equipment. By eliminating delays and unnecessary activities, the equipment can be more fully utilized, time reduced, and the cost associated with idle equipment reduced (*Fig.* 3).

The Operation Chart

The Operation Chart or Sheet (sometimes called a "left and right hand chart") is a detailed breakdown of the motions of an operator performing activities usually at one work station, such as the serving counter. Only two symbols need be used: a small circle for transportation of the hand and a large circle to denote an action such as grasping an article (*Fig.* 4).

This analysis is useful in designing a work place to facilitate, as much as possible, similar and balanced

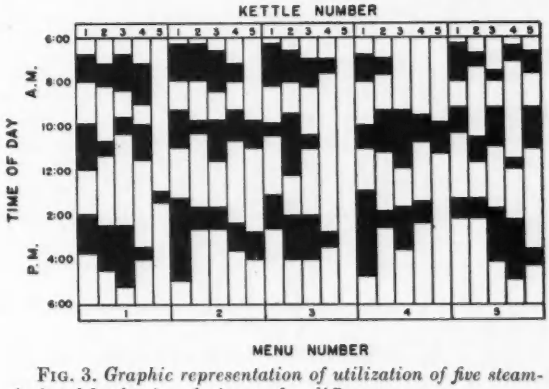

FIG. 3. *Graphic representation of utilization of five steam-jacketed kettles in relation to five different menus*

activities of the hands. Thus the work load can be more evenly distributed between the hands reducing bodily fatigue and increasing output.

DESIGN OF WORK PLACE

A body of tenets, called "principles of motion economy," has been developed which makes it possible to increase output greatly with a minimum of fatigue from manual activities. These principles find extensive use in the design of a work place where the goal is a layout which takes advantage of "natural convenience." Among them are the following principles which can be applied to food service activities:

(a) Tools and materials should be located close in and in front of the operator, but at least within the "maximum work area" (an area traced by the arms extended and pivoted from the shoulder).

(b) Tools should be pre-positioned for ready grasping.

(c) There should be a fixed and definite place for all tools and materials.

(d) Motions of the arms should be rhythmic, smooth, opposite, symmetrical, and simultaneous wherever possible.

(e) Two or more tools should be combined if possible.

(f) The materials should be delivered close in by gravity and disposed of by dropping if possible.

(g) A minimum of handling or rehandling of the materials should be permitted.

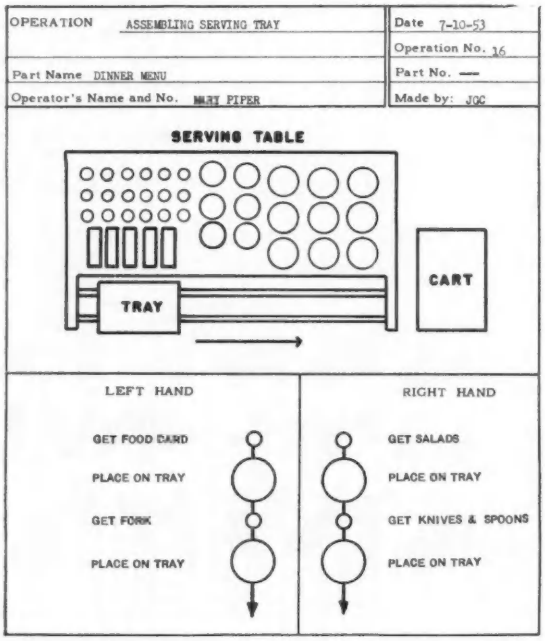

FIG. 4. *Operation sheet for worker assembling tray for dinner menu, with indications of tasks for both right and left hands*

(h) The worker should be at ease; he should be supplied with a work table of the correct height, a chair of the correct type and height, foot rests, proper lighting, and so forth.

SELLING AN IDEA

Most people have experienced the disappointment of having a good idea rejected, either by a supervisor or by an employee refusing to adopt it. In reviewing such a rejection, it is often discovered that many factors of salesmanship were lacking. It has been the experience of many that even in selling an idea, adaptation of the work simplification approach can aid enormously. One or several of the techniques could have been adapted to make the presentation of an idea more accurate, more interesting, easier to explain, and better understood. A sound approach also places one in a better position to appreciate and anticipate questions such as: "How will this benefit me?" "Is it worth while?" and "Why should the change be made now?"

As with any business policy, the program requires top administrative support. This is exceedingly important when something as vital as jobs is at stake. The support must be genuine with constant recognition of employee welfare and security. But, the responsibility for the effectiveness of a continuing program of work simplification should not fall to just a few.

It has been known for many years that there is a tremendous potential for cost and work saving in the minds of the employees themselves. The benefits obtained from tapping this important source of ideas are not without cost. High supervisory skill is required if the program is to be effective. Some of the factors involved in handling such a program are as follows:

(a) Stimulation of the employees to improve their own jobs and recommend changes.

(b) Provision of work simplification training to enable the employee to improve his job.

(c) Sound evaluation of the factors involved to arrive at the right decision as to whether to accept or reject an idea.

(d) Satisfactory explanation to the employee as to the reasons for rejection (if a suggestion is not accepted) so that he will continue to supply suggestions.

It is often easier for a person to resist a change than to learn an easier way. A change may upset his habit patterns or he may believe an improvement of his job is a criticism of his performance. Offering a means whereby the employee can contribute ideas and be consulted on ideas affecting his job can overcome some of this resistance.

TRENDS IN WORK SIMPLIFICATION

The dietitian can have other techniques available to help make work easier. Recent developments in

the statistical sampling approach have been effective in obtaining more information on a working environment in less time and at reduced costs than previously possible. Predetermined times for fundamental work activities make it possible to be more objective in recognizing areas needing improvement and evaluating alternatives. Research in the physiologic cost of work also yields more objective criteria for methods study.

At the same time, management and the engineer can expect more valuable help from the dietitian and the food service employees who are familiar with easier work techniques. With such advice, recommendations for labor-saving equipment and facilities will be more factual and complete, and work will be performed more efficiently. We all can plan on having our work made easier by adopting the philosophy of "there must be a better way" and utilizing the techniques which have been developed to help find that better way.

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Nutritional Requirements in Latin America

Preliminary tables on the nutritional requirements in Central America and Panama have been developed by the Instituto de Nutrición de Centro América y Panamá (INCAP), Guatemala City. Requirements have been broken down into six major classifications with sub-categories for two. These are:

I. Requirements for calories, thiamine, and niacin
   a. For active farmers—both men and women
   b. For a reference man and woman
   c. For a sedentary man and woman
II. Requirements for other nutrients for adults
III. Requirements for calories, thiamine, and niacin during the final trimester of pregnancy and lactation
   a. For the active adult woman
   b. For the reference adult woman
   c. For the sedentary adult woman
IV. Requirements for other nutrients during the final trimester of pregnancy and during lactation for adult women
V. Requirements for calories for adolescents of both sexes and for adolescent women during the final trimester of pregnancy and lactation
VI. Requirements for calories, thiamine, and niacin for children of both sexes up to sixteen years of age.

Caloric requirements are calculated for three average temperatures, according to weight, age, and sex of the individual. Since it was felt that the level of physical activity in rural Guatemala is higher than that of the "reference" man and woman as defined by the FAO Committee on Calorie Requirements, special calculations were made to apply to the farm population, in addition to those for the FAO reference man and woman, and for the sedentary man and woman.

Thiamine requirements were figured on the base of 0.5 mg. per 1000 calories, and niacin, at 5.0 mg. per 1000 calories.

"Other" nutrients listed in the second classification are: protein, calcium, iron, vitamin A, riboflavin, and ascorbic acid.

Calculations for adolescents (sixteen to nineteen years) were broken down according to weight as predicted at twenty-five years of age. There are five such categories, i.e., the forerunner of the adult of twenty-five weighing 45 kg., 50 kg., 55 kg., 60 kg., and 65 kg.

Effect of Storage on Butternut Squash and Its Seeds[1]

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NUMEROUS investigators have studied the physiologic activity of fruits and vegetables after harvesting. Langworthy and Milner (1) observed from their work with the respiration calorimeter that during ripening, banana starch was transformed into cane sugar and that at the greatest intensity of ripening, the heat production accompanying the banana-starch cane-sugar reaction was equivalent to approximately 1 calorie per hour per kilogram. Snyder and Lachman (2), Brown (3, 4), and McKillican (5) found that on a dry-weight basis the carotene content of carrots increased during winter storage. A number of investigators (6–13) have published data regarding the composition and nutritive value of a variety of squashes grown in widely separated areas under divergent conditions.

Still others (14–21) have discussed changes in squashes during storage. Chittenden and Hartwell (22), Osborne and Clapp (23), Baughman and Jamieson (24), Phillips (19), Jones and Gersdorff (25), Arasimovich (26), and others have reported studies of squash seeds and the nature and composition of the protein, globulin, oil, and other components of squash seeds. The literature consulted, however, did not supply much information comparing the composition of developing squash seeds with the composition of the edible portion of the squashes from which they were obtained. The present study was undertaken to determine, at different stages of storage, the relation between the composition of Butternut squashes and their seeds.

EXPERIMENTAL PROCEDURE

The Butternut squashes (*Cucurbita moschata Duchesne*) used to study changes in chemical composition during winter storage were produced from seed selected from squashes of known ancestry. To eliminate all seed-borne diseases, the seed was carefully treated with a proved fungicide. The seed was planted in Connecticut Valley sandy loam soil. It was fertilized with a commercial 5-10-10 fertilizer at the rate of 900 lb. per acre; manure or compost material was not used. An insecticide containing neutral copper (7 per cent metallic copper), rotenone, and prophyllite was applied at frequent intervals during the early growing season to eliminate possible damage of the young plants by any bugs that attack squash vines.

The climatic conditions during the 126-day growing season were: 17.44 in. rain; a relative humidity range of 59 to 96 per cent, averaging 78 per cent; 925 hr. bright sunshine; and a temperature range of 36° to 90°F., averaging 66.8°F.

At harvest time, to eliminate the possibility of infecting the squashes through open wounds, about 3 to 5 in. of stem was left attached when they were cut from the vine. The squashes were carried from the field to the laboratory in lettuce boxes padded to prevent bruising. At the laboratory, sixty mature and sixty immature squashes (light cream colored with longitudinal green stripes) were carefully freed of any adhering soil and placed upon shelves in darkness. Care was taken to keep the squashes from touching each other during storage. Additional squashes that were not cleaned were reserved for observation. The squashes were weighed individually when they were placed in storage and at approximately two-week intervals thereafter.

Throughout the experimental period, a hygrothermograph was used to make a continuous record of the temperature and relative humidity of the area in which the squashes were stored. The average temperature for the 221-day experimental storage period was 60°F., but the weekly temperature ranged from 54° to 70°F. The relative humidity during the winter storage period averaged 76 per cent, with the weekly average varying from 70 to 90 per cent.

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[2] The authors appreciate the courtesy of Dr. O. H. Pearson of the Eastern States Farmers' Exchange for supplying the squashes used in this study and for providing information regarding the conditions under which the squashes were grown.

TABLE 1

Ratio of weight of seeds to weight of intact squash

LENGTH OF STORAGE	MATURE SQUASHES*			IMMATURE SQUASHES*		
	Squash	Seeds	Ratio	Squash	Seeds	Ratio
days	*gm.*	*gm.*	*%*	*gm.*	*gm.*	*%*
0	910	37	4.1	989	35	3.5
41	960	33	3.5	839	34	3.3
62	879	36	4.1	913	39	4.3
96	842	32	3.8	947	25	2.6
134	881	36	4.1	1031	42	4.1
221	768	36	4.7	916	35	3.8

* Fresh weight basis; average of five typical squashes.

The squashes and their seeds were assayed at six intervals during the experimental period, namely: after storage for 0, 41, 62, 96, 134, and 221 days. At each assay interval, five typical squashes were selected from the mature squash and from the immature squash groups. The squashes were weighed and split longitudinally. The seeds were removed from the surrounding placenta and weighed, and the ratio of seed weight to total squash weight was computed. Both the edible portion of the squashes and the seeds were assayed for water, protein, fat, total sugars, starch, and carotene by methods adopted by the Association of Official Agricultural Chemists (27).

RESULTS AND DISCUSSION

The data, accumulated at the six assay periods, relative to the weight of the squashes, the weight of the seeds, and the ratio of the weight of seeds to the weight of the intact squashes for both the mature and the immature squashes are reported in Table 1. The ratio of weight of seeds to the weight of the mature intact squashes varied from 3.5 to 4.7 per cent, whereas that for the immature squashes varied from 2.6 to 4.3 per cent. However, considering all the values obtained at the six different assay intervals, it appears that the ratio of the weight of the seeds to the weight of both the mature and the immature intact squashes remained fairly constant during the 221-day storage period.

The results of the 133 assays of the mature and the immature Butternut squashes and their seeds for water, protein, fat, total sugars, starch, and carotene are reported in Table 2. The values obtained for protein, fat, total sugars, starch, and carotene have been converted to a dry-weight basis. The water content of the edible portion of the mature Butternut squashes did not increase or decrease consistently during storage; the amount of water in the immature squashes, however, remained more nearly constant than that of the mature squashes. During the first 134 days of storage, the protein content of the immature squashes was somewhat larger than that of the mature squashes. The amount of protein in the mature and in the immature squashes remained quite constant until the final assay, when for some unknown reason a much higher value was obtained.

TABLE 2

Composition of Butternut squash and its seeds

LENGTH OF STORAGE	WATER	PROTEIN*	FAT*	TOTAL SUGARS*	STARCH*	CAROTENE*
Edible Portion from Mature Squashes						
days	*%*	*%*	*%*	*%*	*%*	*mg./100 gm.*
0	80.4	5.1	0.5	30.6	34.7	28.6
41	77.8	7.6	—	44.1	22.5	20.7
62	80.6	7.2	—	—	17.5	32.9
96	82.2	6.2	—	60.7	2.8	34.3
134	77.4	7.0	—	52.2	3.1	32.7
221	82.2	15.2	—	41.6	5.6	31.5
Edible Portion from Immature Squashes						
0	82.0	7.2	0.6	27.2	35.6	25.6
41	80.4	6.6	—	39.8	24.0	23.0
62	80.0	7.5	—	—	18.0	29.5
96	80.5	7.2	—	—	12.8	31.8
134	83.2	9.5	—	56.5	6.5	25.6
221	84.6	11.0	—	33.8	8.4	31.8
Seeds from Mature Squashes						
0	49.2	28.3	34.1	—	12.8	7.7
41	32.2	32.4	33.2	4.3	10.1	5.5
62	32.1	32.4	37.4	1.6	7.5	6.2
96	30.8	30.8	35.0	1.0	9.2	5.5
134	29.9	31.1	33.1	1.6	6.3	3.6
221	30.2	32.7	31.7	1.5	5.6	3.0
Seeds from Immature Squashes						
0	61.5	19.5	26.8	6.0	17.9	7.3
41	36.0	32.7	32.3	4.7	9.4	4.4
62	36.0	30.8	32.5	1.9	8.1	7.5
96	35.6	31.5	32.3	0.9	9.9	3.7
134	31.2	31.5	34.6	1.6	8.9	2.8
221	33.5	29.9	28.1	1.5	9.6	3.5

* Dry weight basis; average of five typical squashes.

Inasmuch as only a small amount of fat in the edible portion of both the mature and the immature squashes was found at the end of the first assay period, no determinations were made for fat after the last five storage periods. The values for the total sugars in the edible portion of both the mature and the immature squashes varied from one assay to the next. Although the variations did not consistently increase or decrease, the amount of total sugars in the squashes was larger during the second half of storage than during the first half. This finding is in accord with results reported by Phillips (19) who found an increase of total sugars in mature Butternut squashes during three months of storage.

The starch in both the mature and the immature

squashes decreased significantly as the storage period lengthened. At the end of 221 days of storage in darkness, the mature squashes contained only about one-sixth as much starch as at the beginning of storage, and the immature squashes retained about one-fourth of their original starch. The conversion of starch to sugar and to carbon dioxide and water was rapid, particularly during the first 100 days of storage. As a result, the sugar content of the mature squashes was one-third larger at the end than at the beginning of storage, whereas the sugar content of the immature increased one-quarter. Phillips notes (19) that the relatively large amount of sucrose in Butternut squash after storage may be one factor in the very desirable flavor of this variety.

The water content increased only 2.1 per cent for the mature squashes and 3.2 per cent for the immature squashes. Phillips (19) found that the water content of Blue Hubbard squashes increased markedly during storage, but that of Butternut squashes did not change. He concluded "that the water content depends on the balance between the loss of water by evaporation and its gain by respiration."

During storage, the carotene in both the mature and the immature squashes increased, as has previously been reported by Holmes, Spelman, and Wetherbee (28). Increases in the amount of carotene in another carotene-rich crop, carrots, have also been noted by Snyder and Lachman (2) and by McKillican (5).

The water content of the seeds of both the mature and the immature squashes decreased during storage. The protein in the seeds at harvest time was lower than during storage, but the amount present from the 41st to the 221st day of storage was fairly constant. The seeds from the mature squashes contained about 3 per cent more fat than those of the immature squashes. However, the amount of fat was not constant throughout the storage period for either group of seeds. Seed from both mature and immature squashes lost total sugars quite rapidly during the early part of storage; during the last part of the period, both groups contained the same amount of total sugars. At harvest, the seeds from both groups of squashes contained much more starch than during the last five months of storage, when the starch in the immature seeds was greater than that of the seeds from the mature squashes. The carotene in the seeds from both the mature and the immature squashes after seven months' storage was only half that present in the seeds at harvest. The loss of carotene from the seeds held in winter storage was the reverse of the increase of carotene in the edible portion of the same squashes during the same period.

SUMMARY

The composition of mature and immature Butternut squashes and their seeds during winter storage was studied. The edible portion of typical squashes and their seeds was assayed for water, protein, fat, total sugars, starch, and carotene. Assays were made at six intervals during a 221-day storage period. The amount of water and protein, except for the final assay, remained fairly constant for both mature and immature squashes throughout the storage period. There was an increase of total sugars and carotene and a decrease of starch for the edible portion of both mature and immature squashes during storage. The ratio of weight of seeds to the weight of intact squashes for both types of squashes remained fairly constant throughout the experimental period. The amount of water in both groups of seeds decreased as the length of storage increased.

There was about five times as much protein in the seeds as in the edible portion of the squashes from which they were taken. The seeds from the mature squashes contained 34 per cent fat, and those from the immature squashes, 31 per cent. Both groups of seeds lost total sugars, starch, and carotene during storage.

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Eskimo Cookbook

School children in Shishmaref, Alaska, with the aid of Isabelle B. Bingham, their teacher, have compiled from their mothers' recipes what is probably the first Eskimo cookbook. Some of the recipes follow:

Eskimo Ice Cream: Grate reindeer tallow into small pieces. Add seal oil slowly while basting with lard. After some seal oil has been used, then add a little water until white and fluffy. Any berries can be added to it.

Oogruk Flippers (Ooshak): Cut the flippers off from the oogruk. Put the flippers to the seal in fresh blubber. Let them stay there for about 2 weeks. Take the loose fur off the flipper. And then cut them in small pieces, then eat the meat.

Seal-oil, the cookbook states, is made from the blubber or fat next to the skin of the seal. The blubber and skin is cut off the skin, cut into strips, and stored in seal pokes or tins. If left where warm or during the summer, it renders itself.

Opinions as well as directions are given in the recipe for *Ptarmigan:* "Take the feathers off the ptarmigan. Cut the meat and wash so they won't have dirt or feathers on. Put in a pot with water and salt. Sometimes some people make soup of it. I think they like them best without soup. . . Cook the small intestines about 5 seconds in boiling water. Old men and old women always want to eat them."

Another "personalized" recipe is that for *Soured Seal Liver*, made in the summertime: "Place liver in enamel pot or dish and cover with blubber. Put in warm place for a few days until sour. Most of the boys and girls don't like it, except the grown-ups and old people. I don't like it either."

In the "greens" section of the book, we find *Pickniek (mouse food):* "Some people dig Pickniek. They are of a plant. They wash them first. We eat them with seal oil. They are good. They taste like sugar. They are very good with seal oil. Maybe the white man don't like them." *Eskimo potato (Mazué)* is another plant eaten with seal oil.

Another interesting recipe is that for *Boiled Owl:* "Take feathers off from owl. Clean owl and put in cooking pot. Have lots of water in the pot. Add salt to taste."

But civilization has left its mark on one Eskimo recipe, that for *Caribou (Tooto) Soup*, which specifies putting chopped caribou meat into a pot with seasoning, rice or macaroni, and a brand of soup nationally advertised in the U. S.—*Excerpted from: The Washington Dietitian, Fall, 1953.*

Editorial

THE EDUCATED HEART[1]

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Half a century in the history of the world is but a second on the clock of time, but less than half a century spans the entire story of the professional dietitian's contributions to the care of the sick. We who have witnessed a part of the tremendous change in medical care since the turn of the century find the environment within teaching hospitals quite different from what it was when a small group of courageous women decided that an American Dietetic Association with high standards and professional stature could become a reality.

The first hospitals in England and in the United States were not objects of public pride. They were founded as shelters for orphans, vagrants, the maimed, the aged, and the infirm. Most were established as a part of the charitable program of religious and welfare organizations; their hopes were high but their facilities totally inadequate. The "pest houses" set well apart from the community provided some protection against communicable diseases. Other isolated institutions protected the public from the dangerously insane. And, of course, quarters were available in some areas for the care of the wounded and sick whose temporary or permanent occupation was war.

Descriptions of the first hospitals suggest that they were filthy, overcrowded, and depressing. People considered the hospital a place to go to die, and a person might have been considered queer to enter one voluntarily. In many instances, the hazards to health were greater, and in the home the sick were not divorced from their family and familiar surroundings.

Since the turn of the century, however, medical knowledge and medical care have made greater advances than had been the case in all of the preceding centuries. Allied sciences have helped the medical profession to unfold a remarkable succession of the causes of disease. The profession of dietetics has developed during this period of preoccupation with etiology, and we have watched diagnosis develop into extremely complex ritual.

As the various sciences provide the dietitian with more and more intellectual challenges, we are faced with the dual problems of increasing our scientific knowledge and at the same time developing a greater understanding of people in sickness and health. When we accomplish both, we have an "educated heart."

This paper is concerned with two suggestions for accomplishing this goal. The first deals with the challenge of increasing our knowledge and that of our dietetic interns so that we may keep pace with advances in the medical sciences; the other deals with the need to help our interns to have better understanding of and compassion for the people with whom they deal. These have always been the goals of our internship programs. But I have been asked to look into the future. I have tried to do so with great humility, for I have not been directly associated with the training of interns for a number of years. My approach to the question has been through the avenue of education.

TRAINING BEYOND THE INTERNSHIP

The first suggestion is concerned with the training of dietitians beyond the internship. Because scientific medicine and its nutritional implications have enlarged with every decade of the twentieth century, I would like to compare some of the changes in hospital training for medical interns and dietitians. Early in the century, because knowledge was advancing so rapidly that it appeared impossible for one person to be adequately equipped in all phases of his chosen profession, the medical profession began to feel the need to provide specialized training. Consequently, there has been a growing tendency for physicians to specialize. The ophthalmologists were the first group to endeavor to improve the situation when they established the American Board of Ophthalmology in 1916. Certifying boards were created in 1924 for otolaryngology, in 1930 for obstetrics and gynecology, and in 1932 for dermatology and syphilology. Since that date, numerous other boards have been created.

Physicians who wish to obtain specialized training today seek a residency in the field of their choice. During this period of additional study and research, the resident usually assumes some teaching responsibilities; always, however, he has the security of guidance from specialists in his field. The medical intern who chooses the minimum hospital training of one year is not apt to be given a teaching appointment when he finishes, unless he chooses to remain for a residency.

A comparison with the program for hospital

[1] Presented before the Conference of Directors and Staffs of Approved Dietetic Internships in Los Angeles, on August 22, 1953.

training in dietetics is of interest. Since 1932, we have required a twelve-month internship, and since that date dietitians with this limited hospital experience have been invited, in many instances, to become the only staff dietitian in a specialized service. Let's consider the hypothetical problem of an intern. She has been asked to remain as a staff dietitian in pediatrics, but her knowledge in that field is limited due to the pressure of having had so much to learn in a short period of time. Her responsibilities are to include teaching the medical students and interns on the service, the dietetic interns, and student nurses. Has her undergraduate work and internship adequately prepared her to be the authority in dietetics on the pediatrics ward?

Because of the heavy teaching load of most physicians in the medical school, a busy physician will be impatient to wait a year or two while this eager and earnest young dietitian becomes competent in dietetics as it relates to the specialty of pediatrics. She is insecure—and the dietitian who is insecure in her knowledge does not teach well, and it is likely that she does not enjoy her assignments, the physician loses confidence, and the challenge of her position withers pathetically, because she was not prepared for the responsibilities for which she yearns. Granted that her undergraduate work and her internship were of high quality and her teachers were inspiring and she wants to be a dietitian—is it possible for her to have obtained an adequate background to accomplish the task?

Now, let's briefly compare the qualifications for teaching in a hospital and in a college or university. In the university we would not consider a student with a master's degree and no supervised experience to be equipped to teach candidates for doctoral degrees. We ask a comparable task, however, of some of our dietetic interns in hospital programs.

RESIDENCIES IN DIETETICS

Would dietitians gain more status and deserve it if we considered the wisdom of planning for residencies for those dietitians who desired to remain in teaching hospitals? Would the quality of teaching the interns be improved if each of the teaching staff were an expert in her area of responsibility? Would our interns be more inspired by the ever-enlarging challenge that is ours? I can well imagine that you are now considering this an unrealistic, dreamy, starry-eyed, idealistic suggestion. But, we are short of staff dietitians and of interns, and certainly no harm will come from considering the possibility that we are not adequately preparing our dietitians to teach, to lead, to inspire the young who come to learn from them. It is apparent today that in the years ahead it will be impossible for a teaching dietitian to become adequately trained and qualified under our present plan. As knowledge in the medical sciences broadens our horizons, we must be equipped to go forward *with* the medical profession or be left behind. In 1932, it was possible to offer quite an adequate training in the twelve-month internship for our knowledge was extremely limited in comparison with the vistas that are opening now.

For many years, discussions at our annual meetings have reminded us that administrative dietitians must be better equipped to meet the problems of complex institutions. How better to help provide hospitals with outstanding administrative dietitians than to provide residencies for them?

It is probable that every dietitian reading this editorial remembers with gratitude the few persons who have been most influential in the development of her career. Throughout the centuries men have been blessed by the opportunity to learn from those who inspire and challenge them. In some ways, a residency offers this type of wonderful opportunity to study a longer time with the leaders.

Now, by residency I do not imply only the privilege to do the less technical phases of administration and to be the relief dietitian during holidays. Residency must offer the opportunity for study, for research, and for learning by doing. The residency must be so well planned and implemented that the dietitian will, on satisfactory completion, be prepared to accept positions of administrative responsibility and educational leadership. Status, salary, and recognition of specialty commensurate with this additional training will come as our accomplishments merit them.

I am not suggesting that residencies be available for all dietitians; the hundreds of small hospitals throughout the country will probably be best served by the "general practitioner" in the field of dietetics, and these small hospitals could not pay a salary in keeping with the additional training. I am suggesting, however, that we consider the wisdom of offering residency programs for dietitians who desire to make the field of education in the hospital their career. The dietitian who desires to work toward a career in an *academic* institution realizes that she will need more than a minimum academic background.

VALUES DERIVED FROM RESIDENCIES

The suggestion for residency and board membership in specialties is one that would require long study and serious consideration. However, I believe that we might enjoy several results from such a program. First, the staff dietitian would be better qualified to teach, to participate in research, and to challenge the intellectual curiosity of her students. Second, the status of board membership should encourage dietitians interested in teaching to devote their professional lives to learning and to teaching in the hospital field. Third, it should

provide dietitians who are better qualified to go forward at the side of the physician as medical knowledge advances. Wendell Griffith, writing on "The Future of Dietetics" in the Silver Anniversary issue of the JOURNAL, said: "Standards of training and of performance must ever be raised, for in no other way can merited prestige be maintained and increased" (1).

TEACHING HUMAN UNDERSTANDING

And now I would like to consider the problem of helping all of our interns to develop real understanding of and compassion for the people with whom they deal. As medical knowledge becomes more specialized, there is a *risk* that patient care may become impersonalized. A rapidly growing body of knowledge helps us to provide an intelligent approach to diet therapy. However, the risk of being blinded to the total needs of the human being who is ill must be recognized as increased scientific knowledge enhances the "drama of the case." Only when we regard the patient as more than an etiologic jigsaw puzzle will we achieve true acceptance and receive grateful thanks.

I am not aware of any information on the amount and type of hospital and patient contact our interns have had prior to their internship. I can only assume that it is limited. The student nurse is oriented over a period of time, through limited, closely supervised floor work. The dietetic intern rather abruptly becomes a working part of the hospital for 8 hr. a day or more with little or no understanding of what sickness means to the patient. True enough, the medical profession is responsible for helping the patient to understand his illness and to adjust to its restrictions. But the dietitian's successful relationship with the patient depends as much on her understanding of him as on her scientific knowledge. The science of dietetics can be utilized in the planning of a diet in one's office, but the art of dietetics can never be practiced as a solo performance. The art and science of dietetics do not blend for the patient's welfare unless the dietitian understands people as well as she does protein. How adequately are our interns assisted in this very important process of learning the social and psychologic characteristics of illness?

Again, this plea for a greater concern for the patient may sound impractical because dietary departments are so desperately in need of personnel. But I am reminded that the only justification for a hospital is the patient—to serve those who are ill, to do research so that others may benefit, and to teach those who will follow us in caring for the sick. Volumes have been published on the need for the best possible nutritional status before and after surgery; during the entire period of convalescence; during the entire life span. We, who have watched this information unfold, believe it in our minds; it has brought added prestige to the service we can offer and it justifies more fully the existence of our profession. But, increased knowledge will not benefit the patient unless human relationships permit the science of dietetics to operate successfully in the art of feeding people. The success of any dietary plan is not measured by the menu; it is measured by the understanding and confidence enjoyed by the dietitian and her patients. Food eaten, not menus written, help the patient in his struggle to regain strength and health.

THE HOSPITAL ROUTINE

When a patient enters a teaching hospital, the parade of specialists begins. One examines his eyes, another his skin, another his blood, and so on. The average patient does not understand what is going on or why, but he accepts the authoritative approach for the period of his illness and loses to a very great extent, the privilege of making decisions for himself.

Then the dietitian comes in to meet him. To her he is not just another "case," interesting or routine; he is a person who is temporarily removed from the social fabric in which he has attained some type of status. She is in a position to permit him to make a few decisions for himself: rye bread for breakfast, buttermilk at bedtime, and brown sugar on his cooked cereal. On the basis of her scientific knowledge, she assures him that the diet his doctor has suggested for him can well include these foods; on the basis of her compassion for human beings, she assures him that she will gladly see that these foods come to him. This wise dietitian has permitted the patient to make some decisions for himself in a situation where decisions are usually made for him.

Food is the one and only aspect of their care that most patients can judge, and judge it they will. Radios, television sets, adequate parking facilities, beauty shops, and other conveniences are helpful, but the three meals a day are, in my opinion, of greater significance to the hospital patient. These trays remind him that the hospital is trying simultaneously to be both specialized and personal, and that his wishes are considered. Of course, few hospitals can afford to offer a completely free-choice menu for all patients, but the art of dietetics can be practiced without the largest budget in the country. Incidental teaching is not to be overlooked or the satisfaction which comes to the dietitian whose patients are eating the foods served, and enjoying them, and who await with eagerness her next visit.

We must help our interns develop the security that comes from understanding how sickness alters the person emotionally as well as physically. Charles Lamb, in his essay, "The Convalescent," described the egocentricity of the sick when he wrote: "How sickness enlarges the dimensions of a man's self to himself! He is his own exclusive object. Supreme selfishness is inculcated upon him as his only duty."

And when the sick try our patience, we might remember Lamb's words about the intolerance of some who are ill: "If there be a regal solitude, it is a sick bed. How the patient lords it there" (2).

The use of antibiotics, early ambulation, and other advances have decreased the average length of stay in voluntary hospitals from fifteen days in 1929, to eight days in 1952. It must seem to some dietitians that patients are like comets; they come out of the darkness, streak across their path, and are gone. This very fact challenges us to make better use of our opportunities while the patients are under our care. We have less time to demonstrate the art and science of dietetics to each patient, but we have a greater number of patients to contact.

Shorter hospital stays also challenge us to have a closer relationship with the official and voluntary agencies in the community for, today, the community opportunities for assistance are greater (3).

As public health measures have grown beyond their original scope of quarantine and environmental sanitation, and as more emphasis is being laid on the health of the individual and the family, the practice of preventive medicine becomes more and more interwoven with that of therapeutic medicine. Hospitals and their out-patient departments are increasingly being looked upon as strategic centers for all health service activities. Their opportunities in the fields of public health and preventive medicine are many and varied and comprise aid not only in communicable disease control, provision of maternity services, maintenance of diagnostic and health centers and laboratories, but also in effective dissemination of health information.

As the pattern of community organization evolves, the hospital and its out-patient department, the health centers, and other community agencies created for the maintenance of the public health may become so interwoven with each other and with the woof and warp of the social fabric as to become indistinguishable as separate entities and recognizable only by the auspices under which they function. Hospital horizons are vastly expanding.

SUMMARY

For twenty-one years we have concerned ourselves with the twelve-month internship for dietitians. During this internship, the student becomes only as proficient in any specialty as her interest, ability, opportunities offered, and time have permitted. Two major questions arise as we study our present program in terms of meeting hospital needs today and tomorrow. First, will a residency program better equip staff dietitians to teach, to inspire, and to lead the interns of tomorrow? Is a program of residency feasible within the administrative framework of our teaching hospitals? Second, how can we better help our interns to have understanding of the social and psychologic as well as the physical aspects of illness and rehabilitation?

Finally, as "hospital horizons are vastly expanding" . . . and as "the practice of preventive medicine becomes more and more interwoven with that of therapeutic medicine," are we adjusting our concepts of the internship to meet tomorrow's needs?

The profession of dietetics has accomplished much because of the wisdom, the work, and the dreams of its members. We are proud of the growth of our profession within the short span of thirty-six years, but we must be alert to the *risk* of *justifying inadequate advances* because "we are a young profession." The challenge is the greater because we are young. Our justification as a profession within the walls of the hospitals will be determined by our willingness and our ability to adjust to the needs of an ever-changing program of medical care. For example, are *all* dietary departments willing to relinquish the responsibilities that can be carried by nonprofessional workers so that our interns will have a greater opportunity to develop an educated heart?

Dr. Milton Rosenau tried for years to define for his own purpose the dreams of public health and preventive medicine. In his creed (4), I find the philosophy of the educated heart.

It dreams of a time when there shall be enough for all, and every man shall bear his share of labor in accordance with his ability, and every man shall possess sufficient for the needs of his body and the demands of health. These things he shall have as a matter of justice and not of charity. It dreams of a time when there shall be no unnecessary suffering and no premature deaths; when the welfare of the people shall be our highest concern; when humanity and mercy shall replace greed and selfishness; and it dreams that all these things will be accomplished through the wisdom of man. It dreams of these things, not with the hope that we, individually, may participate in them, but with the joy that we may aid in their coming to those who shall live after us. When young men have vision, the dreams of old men come true.

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Current Comment

DEVELOPING A NUTRITION PROGRAM IN THE VIRGIN ISLANDS[1]

TRANDAILER JONES[2]

Former Director of Nutrition Services, Virgin Islands Department of Health, St. Thomas, V.I.

The United States purchased the Virgin Islands from Denmark on January 25, 1917. They are the most easterly possessions of the United States in the Western Hemisphere, lying approximately 90 mi. due east of Puerto Rico in the West Indies where the Caribbean and the Atlantic meet.

The population of 26,665 is divided, with 12,103 on St. Croix, the largest island (84 sq. mi.), and a combined total of 14,562 on St. Thomas and St. John, the smallest island with 24 sq. mi. St. Croix and St. John are rural communities with the population dispersed, while that of St. Thomas is concentrated in the cosmopolitan community of Charlotte Amalie, the capital of the Virgin Islands.

Although many factors are involved in realizing good health, obtaining an adequate diet is an essential criterion of which income is a most important phase. In order that a community may possess an economy which can provide the necessities and some of the comforts of life, it must be endowed with an adequate variety and quantity of natural resources. Although the Virgin Islands are popular as a resort area, they are grossly lacking in mineral resources and inadequate in agricultural land resources. The islands are mountainous. Moreover, except for St. Croix, the soil is poor and the vital top layer is relatively shallow. Although St. Croix is more level and conducive to agricultural pursuits, sugar cane is the principal crop rather than other food crops, raw sugar serving as the chief agricultural export of the Virgin Islands.

In the area of food production it is important to appreciate the fact that the cost of land per acre in the Virgin Islands is prohibitive to the average farmer. He toils for someone else for very little compensation. The psychologic problems inherent in this structure, therefore, cannot be disregarded, for they have caused a dearth of contributions from this essential population group.

Another block to improved food crops is an inadequate water supply. In the islands, rainfall is the principal source of water for human beings, plants, and livestock. Although the rainfall is ample, community "catchments" and storage space need to be expanded. Also, in a hot climate such as that of the Virgin Islands, during a long dry period when water for truck farming must be purchased, production costs for vegetables of low carbohydrate content have been observed to equal the retail price of the imported product. Despite these handicaps, no one can deny that a continued and expanded program of scientific truck farming would greatly increase the local food supply.

Today imported foods, principally from the continental United States, supplement the local supply. As would be expected, however, these foods are very expensive; for example, a pound loaf of bread retails for 35 cents, a prohibitive price for a family in which the mother, as a domestic worker earning approximately $25 to $35 a month, usually provides the steady support of the home. Her earnings, which may or may not be supplemented by contributions from the father, must provide for food, clothing, housing, recreation, and incidentals.

Under such adverse conditions of inadequate food supply, high consumer prices, and the low purchasing power of a destitute group, it was long ago recognized that nutrition education needed to be an integral part of the health program.

THE PROBLEM

The Department of Health, with headquarters in Charlotte Amalie, is responsible for both a medical care and a preventive health program for the three islands. It directs the activities of several institutions, including the hospitals and health centers administered by the agency. My affiliation with the Department of Health marked the opening of the Nutrition Division of that agency. It was not expected that a functioning nutrition committee would be available to point out the nutritional needs of the community, to help develop an awareness of the relation of nutrition to health, or to stress the importance of improving the nutritional status of the community.

Because the term "nutritionist" was unknown to the community, it was imperative at first to interpret the functions of the nutritionist and the nutrition program to other divisions of the agency; to the allied agencies of Welfare and Education; and to the active nonprofessional organizations of the Women's League, the Red Cross, and the Parent-Teacher groups. Through personal contacts with key community leaders and through affiliation and participation in the programs sponsored by the agencies

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[1] Presented at the 36th Annual Meeting of The American Dietetic Association in Los Angeles, on August 26, 1953.

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and civic groups, acceptance of and appreciation by the community for the services of a nutritionist were, in time, realized. Furthermore, these activities paved the way for initiating in-service training for personnel and offering consultation services to health, education, social welfare, and agricultural agencies. At the same time, essential information was obtained on the needs and resources of the community. With this material, the possible attainments and goals of the nutrition program came into clear focus. Particularly, the specific groups to whom concerted efforts would be directed in nutrition education were clearly defined.

Our nutrition program was organized and developed around actual agricultural and economic conditions, existing food habits, and the nutritional status as observed by local physicians. The program was never intended to condemn, reject, or destroy the food patterns of the community. The emotional security obtained from using familiar foods is too important to be regarded with indifference. By recognizing this and being ever mindful of the economic limitations, supplements to the local food pattern were promoted within attainable goals.

For example, boiled fish and "fungi," a breadstuff of cornmeal, constitute a popular dinner menu. Fish and cornmeal are good foods. If, however, the main meal of the day is to contribute an appreciable amount of healthful materials needed to support and promote good nutrition, supplements of fruits and/or vegetables to this traditional menu are essential. Recommendations were made, therefore, for those foods that are either near at hand or economically available.

GOALS OF THE PROGRAM

When appraising the eating habits of the community, one finds entwined in the food practices of the Virgin Islander both commendable points and those that need attention. The following items received considerable attention in our community nutrition program:

(a) The use of whole grain and enriched cereals in lieu of cornstarch and tapioca for breakfast cereals.

(b) Instruction, with demonstrations, in food selection and preparation.

(c) Assistance in menu planning so that the essential foods needed by each family member would be included in amounts as nearly adequate as possible on available monies.

(d) Education as to what constitutes a good diet.

(e) Promotion of the use of beets, turnips, kohlrabi, and radish leaves. (In the early stages of the program, these greens were either fed to the donkeys or discarded as garbage, although they represent a good source of calcium, iron, and vitamin A, the inadequacy of which was observed by the physician to contribute to the malnutrition of the community.)

(f) Promotion of greater appreciation for alleviating undesirable attitudes toward certain foods, such as those mentioned above. (It was further noted that in the minds of the people, the use of certain foods connoted different levels of financial status. Breadfruit represented a low economic status; hence, it is neither grown nor eaten as extensively as in neighboring islands. On the other hand, imported fruit cocktail and Vienna sausage were purchased under adverse circumstances by the low-income group. Only through education can such ideas be removed to allow for improved family nutrition.)

(g) Increased use of foods with less carbohydrate content in one-pot meals, particularly the legume soups. (It is customary to prepare peas or beans with various cuts and kinds of meats and two or more high-carbohydrate foods such as sweet potatoes, tannias, yams, cooking bananas, and plantains. The dish is then sweetened to taste and served with a breadstuff of either dumplings or "clumpies." Concurrently, the undesirable effects of too much refined sugar were emphasized.)

On the other side of the coin, some commendable features in the local food pattern were found. There is a liberal use and preference for legumes, fish, and local fruits. Uncultivated green leaves or "bush" for table use are commonly eaten, thus adding to the intake of colored vegetables.

To appraise the diet of a community accurately, information of the nutritive content of foods eaten is essential. Several foods common to this locality have not been analyzed, unfortunately, and the lack was recognized. However, the immediate problem was that of supply, income, and the use of local foods to the fullest extent.

FOOD DISTRIBUTION PROGRAMS

The diet of the community was observed with few exceptions to be sufficient in calories, but too few came from the protective foods. Such foods account for a considerable portion of the food dollar. Also, to produce 1000 calories of these foods requires considerable land, and there is not enough tillable land to meet this need. It therefore becomes necessary to obtain more food for distribution as gifts in a feeding program for the critical segments of the population. Several programs of this nature were instituted at different times to effect substantial improvements in the nutritional well-being of the recipients.

The following programs provided an ideal setting for teaching and promoting nutrition education to the parent, the woman of child-bearing age, the child, and the older student:

(a) The distribution of skim milk and multiple vitamins to infants and preschool children.

(b) The distribution of whole milk, colored vegetables, and foods high in ascorbic acid to children with orthopedic conditions.

(c) The distribution of the Type "A" lunch by the Department of Education.

In addition, the use of enriched flour in commercial baking was initiated in the principal bakeries and also in the food service units of the several institutions administered by the Departments of Health and Welfare.

Other areas of contact for extension of nutrition education were provided through meetings with teachers, parents, home economics classes, civic organizations, the antepartum and postpartum groups of women, and other selected groups having similar interests and food requirements. It has been observed that the health of the baby and child is an effective appeal to the mother to provide the family with the opportunity to build good habits with regard to foods.

The communities of the three islands have shown great interest in health betterment of the people. The teachers, educational leaders, and school lunch workers have cooperated in executing nutrition programs designed to influence the child and student to develop proper attitudes toward eating. The staff of the health agency and that of Welfare and Education now request consultation services of the Nutrition Division in programs with a nutrition component. Areas of service include appraising and interpreting nutrition literature, preparing and selecting educational materials, interpreting food needs for individuals and families, budgeting, and promoting the use and availability of nutritionally improved products. These activities serve both to strengthen the health program and to extend nutrition education to more people. Thus, in spite of the agricultural and economic handicaps, continued cooperation of all community agencies and interested citizens will certainly achieve improvements in the health and well-being of the people of the Virgin Islands.

TEACHING NUTRITION IN THE MELTING POT OF THE PACIFIC[1]

MARJORIE GREIG ABEL

Chief, Bureau of Nutrition, Territorial Department of Health, Honolulu, Territory of Hawaii

In Hawaii, the basic principles of nutrition education are the same as they are anywhere. Nutritionists, teachers, cafeteria managers, nurses, and physicians are trying to improve the food habits of the people. When I traveled from San Francisco to New York in 1947, observing nutrition programs, the similarities in problems and solutions were more apparent than the differences. Kuulelani may not give her family enough luau and tenehi; Hatsuko may not use horenso or shirona; Philomena may not serve marung-gay or ampalaya regularly. It all means the same thing: not enough green leafy vegetables. In any language, it is still possible to appeal to the human desire for beauty and health, and if we can point out the means to achieve these and have a little money left over for a television set, all the better.

Food habits do change—sometimes through planned teaching and sometimes without guidance under pressure from outside forces. Hawaii is called "The Melting Pot" because large numbers of several racial groups with widely differing cultural backgrounds are being molded by events into an increasingly homogeneous population.

Our geographical position affects our nutrition because we are isolated. The small size of the islands and the rugged mountains limit the land available for food production, and our agriculture is mainly concerned with two cash crops, sugar and pineapple. Consequently, about 75 per cent of our food must be imported. The long sea lanes make us vulnerable to periodic stoppages in transportation. World War II had a tremendous impact on our food habits, but on the positive side, for the people were much more receptive to nutrition education.

A strong, continued community pressure for Americanization has also had considerable effect on food habits. The school lunch program and homemaking classes in the public schools are powerful forces. The Extension Service, the nutrition research, the teacher training at the University of Hawaii, and the Health Department have all played a part, and the work of volunteer health agencies cannot be minimized.

It has only been in recent years that we have developed an appreciation for the good in our various food patterns. Nutrition education today is based on the belief that there is good in every racial food pattern and that the use of locally grown foods contributes to health. We have had to increase the prestige of some foods and decrease the accidentally acquired prestige of others.

RACIAL AND CULTURAL BACKGROUND

In many ways, the Hawaiian people have not fared well in the changing life of their islands. They had good nutritional practices before the white man arrived. If Tutu fed her grandchildren steamed leaves as "medicine," they still had their green leafy vegetables. In time, however, the Hawaiians were lured from their home food production to work for wages, and they learned to buy rice, saloon pilot biscuits, and other foods which are poor substitutes for fish and poi.

As the sugar industry grew, new sources of labor were needed on plantations. The Chinese came first, but many soon left the islands or moved to town and started small businesses. Chinese restaurants

[1] Presented at the 36th Annual Meeting of The American Dietetic Association in Los Angeles, on August 26, 1953.

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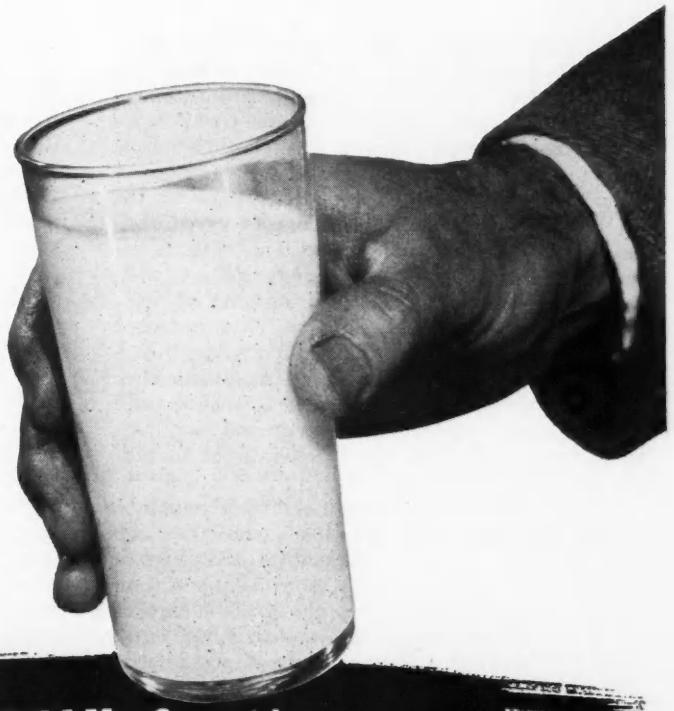

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Phosphorus	.27 gm.	.4 gm.
Iron	1.5 mg.	4.4 mg.
Vitamin A	843 I.U.	1745 I.U.
Thiamine	.12 mg.	.7 mg.
Riboflavin	.45 mg.	1.6 mg.
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are still more numerous than those serving any other racial food except American. Chinese cooking has never lost prestige, and the vegetables the Chinese brought with them have been accepted by all races.

The mass migration of Japanese continued from 1886 to 1906. Many also left the islands, but more of them remained on the plantations than of the Chinese. Most who started restaurants served Caucasian food rather than Japanese. The Japanese remained segregated for a long time, keeping to their own religions and schools and clinging to such customs as the public bathhouse. They imported vast amounts of pickled and dried foods from Japan and clung to their own food habits. As late as 1925, Japanese families often hid their food when a nurse or nutritionist visited them. The ground work was there, but it took the war to precipitate the adaptation of many of the Japanese.

The Filipinos were the last large racial group to arrive, from 1906 until 1932, unless you count the influx of Mainland war workers from 1940 through 1944. Later several hundred more Filipinos were brought in. There is still a large predominance of single men among the Filipinos, and they usually do their own cooking. A Filipino home of any kind is characterized by a flourishing garden with a variety of green leafy vegetables. Unfortunately, this practice is declining, and there is a marked decrease in the use of vegetables. The Filipino eats almost anything, it seems, and this tendency has been the target of derision from other racial groups.

There was time between these major migrations for each group to become somewhat adjusted. Early isolation disappeared and as long as I can remember, there has not been anything comparable to the isolation of New York's Chinatown. Next-door neighbors get to know each other, and this close association breeds understanding and acceptance.

A factor common to all Oriental peoples was the use of rice as the staple food. In 1940, the annual per capita consumption of rice for the Territory was 210 lb., although this had dropped to about 106 lb. in 1952. Rice is more than a food; it is tied so closely with the culture of the Orient that the word itself means "meal" in some languages. It is an emotional factor. Any threat to the rice supply brings an hysterical rush to stock this food. At the first rumor of a strike, rice disappears from the market, and fantastic prices have been paid for it in a sort of black market. Rice is contagious. Hawaiians and many Caucasians born in the Islands depend on rice as do the Oriental peoples. Hawaiians have said they are still hungry no matter what else they eat, unless there is rice.

THE IMPACT OF EVENTS

Waterfront and shipping strikes, whether on the West Coast or in Hawaii, are serious hazards when a community of almost half a million people depends on ships for 75 per cent of its food. During long strikes, food habits have temporarily been changed, and there is some permanent change. In recent years, the home economists have offered community education on adequate or better substitutes and conservation during such times when people are in a receptive mood, and the use of island foods always increases at least temporarily. We like what we eat, and a taste for local foods is acquired during such times.

The importation of Chinese and Japanese foods was drastically reduced in 1938, and in 1941, the war had the effect of a strike multiplied many times. All food imports ceased for a time. The Federal Surplus Commodities Corporation purchased all staple foods shipped to Hawaii, and the Army took control of distribution. Shipping for civilian needs was scarce, and our food supplies were feast or famine. Months without onions ended with the simultaneous arrival of a shipload and a harvest of a large local crop. Lemons for use in bars had the same shipping priority as oranges for family use. We were flooded with canned pilchards, of which we'd never heard, to replace our plentiful local fish supply which was stopped almost completely for security reasons. Civilian meat supplies were based on pre-war consumption, of which about half went to restaurants; yet 90 per cent of restaurant customers were servicemen already plentifully supplied with meat.

These servicemen and the Mainland war workers had definite ideas of the food they liked, and both restaurant and home cooking changed. Vegetables in Chinese food were cooked until soggy, for example. The Japanese were loyal, and to prove it they stopped wearing kimonos and wanted to learn American cooking and meal service.

EDUCATIONAL MEASURES

For years before World War II, there had been a strong community pressure for Americanization. The schools were active, and any behavior that was "typically American" was acceptable, whether it was a breakfast or an attitude. Our young first generation Americans of Oriental ancestry avoided traditional family customs as much as they could, and there was unhappy conflict between parents and children. Many of these young people have become teachers and continue the trend. All of this has had an effect on food habits which was largely unguided and has often led to poor nutritional habits. With it all, there has been an exchange of superstitions as to food for pregnancy and other special situations. Some are good, some not so good.

School lunches were started early; the first recorded cafeteria combined with a training program was at the Normal School in 1912. In 1925, Caroline Edwards became Supervisor of Cafeterias and Home Economics in the Department of Public Instruction. She was a one-man army, and when she retired in

Meat...

and Nutrition During the Anabolic Phase of Postsurgical Convalescence

A large body of evidence shows that supranormal nutrition, especially protein nutrition, aids the patient during the anabolic phase of illness following surgery. With resumption of anabolic response to oral feeding, "what many . . . patients need most is generous intake of highest quality meat, suitably supplemented and appetizingly served."*

Illness of long standing, or injury usually results in dramatic depletion of tissue proteins before surgery. Blood loss during operative procedures increases the depletion. If before surgery the "labile protein store" has not already been depleted, the catabolic response to surgical trauma usually effects such depletion. However, even with heroic feeding measures during the catabolic phase of illness following surgery, replenishment of plasma as well as other tissue proteins presents difficulty. Therefore, for minimizing the hazards going with tissue protein deficiencies, and for shortening the time of convalescence, supranormal feeding becomes mandatory during the anabolic phase in order to provide adequate nutrition for the critically depleted patient.

Because of its outstanding dietetic and nutritional values, meat is dually qualified in the supranormal feeding of the postsurgical patient. Its appetizing flavor induces eating in anorexia and promotes the digestive process. It is easily and virtually completely digested. Its high protein content, of high biologic value, goes far towards satisfying the supranormal essential amino acid needs. Its valuable amounts of B vitamins, iron, phosphorus, potassium, and other essential minerals also prove valuable aids during the period when considerably increased amounts of these nutrients are required.

*Rhoads, J. E.: Supranormal Dietary Requirements of Acutely Ill Patients, J. Am. Dietet. A. *29*:897 (Sept.) 1953.

General Reference: Cuthbertson, D. P.: Nutrition, in Annual Review of Medicine, Stanford, California, Annual Reviews, Inc., vol. 4, 1953, p. 135.

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1946, she left her successor a school lunch system that covered all but a few one- and two-room schools in the Territory. We learn by eating as well as by doing, and children of all races learned to eat many unfamiliar foods in the cafeterias. Oldtimers tell tales of carrots thrown under the table and of refusal to eat tomatoes and cheese. Yet recently, a principal remarked about a new surplus food, "We'll just doctor it up with tomatoes and they'll eat it." Milk and brown rice were stressed. The use of milk in some form has continued to increase through the years.

The story of brown rice is not so happy. In the first place, white rice is a food with high social prestige. The ancestors of most of our people had eaten brown rice while the wealthy and city folk ate white rice. In Hawaii, white rice was available to all and a powerful builder of ego. Because little brown rice was used, loss by spoilage was high and added to the cost. By Herculean joint efforts of the school, nurses, and nutritionist, a community could be induced to use brown rice. But, over and over again, before the practice could become a habit, a strike or a war would intervene and no more brown rice would be available. These repeated disappointments are the reason the Health Department and other agencies are now advocating fortified rice.

As Supervisor of Home Economics, Mrs. Edwards built upon a trickle of interest which started in 1864 when two missionaries took eight Hawaiian girls into their home to learn reading, writing, Christian living, and domestic science. Mrs. Edwards again showed her stature when she pleaded that home economics education "come down to earth" and build from where the girls were in experience and equipment. Today, about three-fourths of the girls in secondary schools have at least one year of homemaking, including nutrition, and the Future Homemakers program is thriving.

Dietetics was introduced into Hawaii in 1920 when Harriet Stone became the first dietitian at Queen's Hospital. Today, thirty-one of the sixty-three members of the Hawaii Dietetic Association are in hospitals, and they have done their share of adding prestige to racial and island foods by publishing the *Hawaii Diet Manual* which includes such exotic foods as tofu, poi, and papaya.

HISTORICAL PERSPECTIVE

In 1922, Carey D. Miller arrived, complete with white rats, to teach nutrition at the University of Hawaii and to begin the continuous program of nutrition research carried on by the University and the Agricultural Experiment Station under her direction. Without the analyses of island foods and the food habit studies carried out by Miss Miller and her coworkers, the field workers in nutrition would have been doomed to continue teaching the use of Mainland foods. These data have furnished the ammunition for our battle for locally produced foods and retention of good racial food habits.

In 1923, two events of importance occurred. The first boy's and girl's clubs of the Agricultural Extension Service were started, and Dr. William R. P. Emerson was brought to Hawaii to conduct a demonstration of nutrition teaching and a training course. The first event developed into the present Extension Service with its emphasis on home food production and better family living, including nutrition and marketing of island produce. The extent of the influence of the Extension Service may be judged by the fact that 2800 women and 1360 girls belonged to clubs in 1952. In addition, 4784 families were helped to improve their dietary planning and 2269 were helped with their food buying.

The second event led to the establishment of a Nutrition Division in the Department of Public Instruction in 1927. Harriet Stone returned as Director with seven school nutritionists. The program was discontinued in 1932. I was one of those early nutritionists, and apparently we wrought well if not wisely from a modern viewpoint. I am still haunted by our slogan, "Drink milk to get fat." In this day of weight control, we still hear reverberations on that theme, especially because, to many of our racial groups, milk is a not-too-popular innovation although ice cream is used in quantity.

Chronologically the next important event, speaking nutritionally, was the organization by Dr. Nils P. Larsen of the Central Nutrition Committee. Established in 1938 to improve plantation health, it was reorganized on December 6, 1941, as the Territorial Nutrition Committee. The bombing of Pearl Harbor on the following day furnished a major project of nutrition education in wartime. Many agencies had programs, and the Nutrition Committee coordinated them. Independently, a group of home economists had organized the Home Defense Committee to coordinate the newspaper and radio programs of the agencies they represented. This committee soon became a sub-committee of the Nutrition Committee and for three years conducted food demonstrations and conducted a daily newspaper column and radio program. I did so many demonstrations on guava canning that I was known as the "guava lady." We cooperated with the Food Control Section of the Military Government in publicizing the use of foods in good supply and of substitutes for those which were scarce. All of these were more than usually successful because of the wartime atmosphere.

The Nutrition Committee raised funds and produced a set of Hawaiian nutrition posters, an early version of the Basic Seven chart, and a color movie, "Found in Hawaii." All these illustrated the use of island foods by island people. The posters and the movie are still widely used.

In 1940, I became the first public health nutri-

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tionist in Hawaii. At first, my program was largely concerned with public health nurses, who had contact with social workers and schools. Through them, I was drawn into those agencies to give staff education in nutrition and to act as consultant on problem individuals or families. It may sound strange that the schools should need the nutritionist from the Health Department. However, because the cafeteria managers and homemaking teachers have a colossal job of their own, there is no one to help the elementary teacher keep up to date with our galloping specialty, nutrition. I was a part of all the wartime activities of the Territorial Nutrition Committee and the Home Defense Committee. Since the Nutrition Committee dissolved in 1948, much of its coordinating activity has been done by the Bureau of Nutrition.

One of the major activities of the Bureau of Nutrition has been the production of simple nutrition education material for free distribution. The use of papaya and bananas in infant feeding, the inclusion of racial foods in a prenatal diet, a calorie table including many island foods, and a low-sodium diet listing racial foods are examples of some of the topics covered.

The participation of the Chamber of Commerce of Honolulu in the nutrition program is rather unusual. During the war, it donated funds toward the production of each of the teaching tools put out by the Nutrition Committee. After the war, it included nutrition in a large study on Postwar Planning for Health. The Chamber paid for the production of a color film strip, "Planning for Good Eating in Hawaii," and in the past year, has published, in color, a Basic Seven chart using island foods and a booklet of bar graphs showing the share values of foods in the Basic Seven chart.

As a direct result of the postwar planning report, the Tuberculosis Association undertook a demonstration nutrition program. They paid the salaries of four nutritionists assigned to work in the Department of Health. The first joined the staff in 1946, and the program continued until this year when the Tuberculosis Association felt that the value of nutrition education had been sufficiently demonstrated. However, the Legislature has provided funds for the coming year for only the Bureau chief and one nutritionist, which will, of course, curtail the program somewhat.

I have avoided description of techniques and devices. Those are similar everywhere. What is unusual in our Melting Pot has been the clear effect on people and their food habits of geography, labor relations, and a war. And I have tried to show something of the about-face in attitude from "you do it my way" to an acceptance of the value of other customs and the development of a cosmopolitan food pattern just as we have developed a cosmopolitan people.

FOOD PATTERNS IN THE CAROLINE AND MARSHALL ISLANDS[1]

MARY M. MURAI[2]

Former Fellow, Pacific Science Board, National Research Council

The Trust Territory of the Pacific Islands is located in the Western Pacific north of the Equator. This territory stretches from latitude 1° to 20° North, from longitude 130° to 170° East, and covers approximately 3,000,000 sq. mi. The area contains 97 inhabited atolls and separate island units composed of 1460 individual islands and has a combined land area of approximately 687 sq. mi. The climate is tropical with small seasonal changes. The mean annual temperature averages about 80°F.

The Marshalls, the Carolines, and the Mariana Islands, except Guam, form the Micronesian group of the Trust Territory of the Pacific Islands. The Marshall Islands are classified as "low" coral atolls, while the Carolines are "high" volcanic islands.

The inhabitants are broadly classed as Micronesians and are of medium stature with brown skin, straight to wavy hair, and high cheek bones. Nine different languages are spoken.

These islands have been under Spanish, German, and Japanese administrations. Since 1945 they have been administered by the United States, under a trusteeship agreement with the United Nations.

The frequency of meals in the Trust Territory depends on the abundance of food supply. Two meals a day are an average. The common methods of cooking are boiling, baking in an earth oven, and roasting over an open fire. Breadfruit leaves serve as plates, coconut shells as cups, and fingers are used for "spoons and forks."

Food is prepared in a cook house, which is of simple construction with a thatched pandanus roof, usually found in the shade away from the main house. Under this shelter, a hole is dug in the ground and a fire built, using coconut husks or dried pandanus husks for fuel. This fire is then completely covered with coral stones until no smoke escapes. Food to be baked is wrapped in leaves and placed on this bed of red hot coral stones and is then covered with more hot stones to form an earth oven called an "um."

DIETARY PATTERNS ON THE MARSHALLS

One of the most interesting and unusual foods of the Marshallese is the pandanus fruit. The pandanus tree, commonly called the screw pine, is found in all of the inhabited islands of the Marshalls. The fruit measures from 1 to 2 ft. in length and weighs about

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[1] Presented at the 36th Annual Meeting of The American Dietetic Association in Los Angeles, on August 26, 1953.

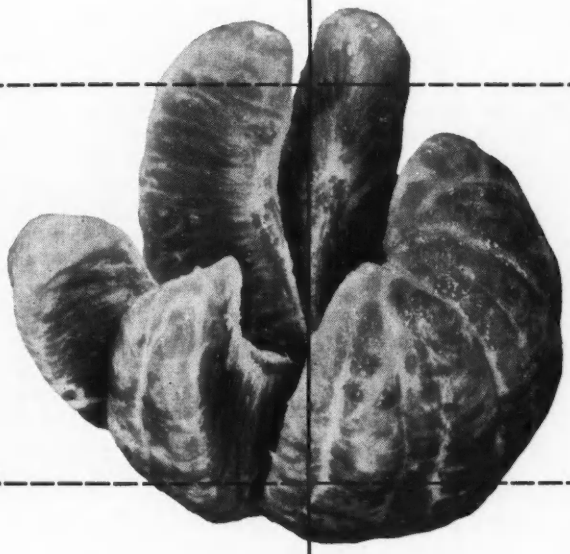
[2] Present address: Department of Home Economics, University of Hawaii, Honolulu.

an evaluation of

THE WHOLE FRESH ORANGE AS A DIET FOOD

More and more nutritionists are recognizing the values whole fresh oranges can contribute to almost every type of diet.

They are appearing in many diets today because fresh oranges, peeled and eaten, provide significant help in solving two of the basic problems involved in most diets.



1. While relatively low in calories, the bulk and natural fruit sugars of fresh oranges help *satisfy appetite.*

2. Under a restricted food intake, the vitamin and mineral content of foods prescribed becomes more important. The ratio of vitamins and minerals to calories is high in the orange.

Furthermore, while the value of orange *juice* with its high content of vitamin C should certainly not be minimized, several of the valuable factors in oranges are found in greater quantity in the meat of the fruit.

These substances include carotene (which helps satisfy the vitamin A requirement), bioflavonoids, inositol (a lipotropic B vitamin), and the protopectins, which have a useful physiological effect as distinguished from a nutritional value.

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20 lb. There are numerous "keys," numbering from 70 to 80, attached to the core, like kernels on a cob of corn. Each key is about 4 in. long and 2 in. wide. The part nearer the core is yellowish orange, and the hard outer section is dark green. When freshly broken off, the ripe keys may be sucked and have an agreeable and sweet flavor. Since these keys are very fibrous, the edible orange colored section is usually eaten by gnawing at the soft inner ends. It is not uncommon for a healthy man to eat one large pandanus fruit daily; children spend practically the whole day at this chore.

Pandanus keys can be boiled and the meat scraped free of fiber on the sharp edge of a shell scraper, a crude apparatus called a "beka." The consistency of boiled pandanus is similar to that of mashed sweet potatoes and it is used as a vegetable or mixed with grated coconuts to make a pudding.

Pandanus is also preserved by squeezing the juicy pulp from the keys. This pulp is poured in flat cakes and dried in the sun. Then the cakes, which are like pancakes, are rolled up, layer after layer until the roll attains its desired thickness and is called "mokan." It is carefully wrapped in pandanus leaves and ingeniously tied with coconut string. This is a valuable food for the Marshallese when traveling on sea voyages from island to island and when fresh food is lacking. Preserved pandanus has a flavor similar to dates.

Breadfruit is the best liked and the most important seasonal crop. The seeded and seedless varieties of the *Artocarpus incisus* are abundant. Breadfruit is boiled, baked, or roasted. The seeds, "colé," of the seeded variety are used as food and have a chestnut-like flavor. During the latter part of summer, breadfruit is preserved by fermentation. This product, called "bwiro" by the Marshallese and "abot" by the Trukese, is kept in pits dug in the earth for as long as one year and small amounts are used as needed for food. A description of the preparation of this food is given later.

Coconut is a third important food. The immature nut provides fluid used in place of drinking water, while the meat is used as food. The mature nut is used either in chunk form or by grating and expressing the juice which is used as coconut milk for flavoring. Coconut oil is made by exposing grated coconut meat to the sun and extracting the oil. The embryo of the sprouting coconut, called "iu," is eaten raw or cooked. Blossom sap of the coconut palm, "jekaro," is used extensively for drinking and cooking. It is obtained by cutting the tip of the flower stalk before the flowers emerge and collecting the sap in glass bottles. Every household has a number of coconut trees tapped in this manner, and it is the job of the men to change the bottles daily.

Other foods that play a part in the Marshallese dietary are taro, bananas, arrowroot flour, fish, chicken, pork, crustacea, and sea fowl. With the influence of many foreign administrations, imported foods such as white rice, soda crackers, canned fish, canned meat, tea, sugar, chewing gum, candy, soft drinks, and canned evaporated milk for infants have gained prominence in the diet of the Marshallese people.

The food pattern for the day is usually a combination of local and imported foods. A typical daily intake for an adult may be as follows:

Boiled white rice	500 gm.
Baked surgeon fish	400 gm.
Black tea	2 c.
White granulated sugar	4 Tbsp.
Drinking fluid of immature coconuts	2 nuts
Raw pandanus fruits	13 keys
Meat of mature coconuts	200 gm.

This pattern is continued with dull monotony during the year with the seasonal foods, such as breadfruit or taro, substituted for pandanus fruit.

FOOD ON TRUK

The most important food for the people of Truk in the Caroline Islands is breadfruit made into a preparation called "kon." In preparing it, breadfruit is first steamed, then pounded with a coral pounder to a dough-like consistency, and finally made into round or oval loaves which usually weigh from 8 to 10 lb. These loaves are wrapped in a neat bundle in large taro, banana, or breadfruit leaves. Kon can be eaten the day it is made or it can be stored for a week or more. By the fifth or sixth day, fermentation begins. On special occasions, kon is rolled into small balls and served in coconut milk. It is the staple food during the breadfruit season. Large amounts are made about twice a week and stored on the floor or on the beams under the roof. These leaf-wrapped packages of kon are taken whenever a Trukese travels as food is not always offered as hospitality. It is a common sight to see women carrying these bundles of kon on their heads as they walk along the road.

Canned fish and meat, crustacea, fresh fish, pork, and chicken are the principal protein foods which are eaten with kon.

Breadfruit is also preserved by fermentation in Truk, as in the Marshalls, but is called "abot" in the Carolines. Preservation of breadfruit usually begins at the end of the season, about September. A pit 3 to 5 ft. wide by 2 ft. deep is dug in the earth. Three or four layers of banana leaves are used to line this pit. Then breadfruits are picked from trees, and the skins and cores are removed. At this stage they are left overnight covered with banana leaves. The following day, skinned and cored breadfruits, 200 or more, are systematically placed in the pit one on top of the other. Layers of banana leaves are placed over the breadfruit and weighted down with large rocks. The breadfruit is left in the pit for two or three

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months to ripen. When the pit is opened, the breadfruits have become a fermented mixture with a pungent odor. This food can be left in the pit for about a year and removed as needed.

Bananas, pineapples, mangoes, papayas, soursops, watermelons, citrus fruits, sugar cane, and tapioca are grown in Truk. Imported foods are similar to those found in the Marshall Islands.

A typical menu for a day for a family of five would be as follows:

For Four Adults

Boiled white rice	3 lb.
Boiled octopus	10 lb.
Kon	10 lb.
Drinking fluid of immature coconuts	8 nuts
Cooking bananas	16

For a Two-Year-Old Boy

Sugar sirup, extracted from sugar cane	2 stalks (each stalk approximately 2 to 3 lb.)
Boiled white rice	3 Tbsp.

This diet is supplemented with breast milk.

The dietaries of the Marshallese and Trukese are very seasonal depending on availability of the vegetable and fruit crops. They are definitely abundant in foods of high carbohydrate content—rice, bread, bread products, and sugar. It might be pointed out that although breadfruit and/or taro are used in considerable amounts, both foods are good sources of the B vitamins and relatively high in calcium compared with white rice and white flour. Thus their use prevents the diet from being very deficient. Pandanus fruits are an important source of provitamin A. In the Truk area, small fish, including the bones, are eaten. These whole fish are excellent sources of calcium and phosphorus. Green leafy vegetables, milk, and eggs are entirely lacking in the dietary patterns.

The foods which I collected are now being analyzed at the University of Hawaii Agricultural Experiment Station under the supervision of Professor Carey D. Miller and under contract with the Bureau of Human Nutrition and Home Economics, United States Department of Agriculture.

A Chilean Looks at Public Health in the U. S.

Present-day communication on a world-wide basis has served to propagandize the North American way of life, the unique qualities of the North American people, and their particular brand of democracy. Nevertheless, when a person has only the newspapers, magazines, radio, and movies to peruse in his search for an understanding of the basic philosophy of the North American people, he comes to the U. S. with a decidedly warped picture of the U. S. citizen.

The philosophy of the entire field of public health is the clearest example of the U. S. type of democracy in action, and with its basic philosophy of the individual being of greatest importance, it is a reflection of one of the two basic ideologies in the world today which are fighting for supremacy. The foreigner who has observed a public health program in the U. S. will return to his country feeling that the rights of the individual, regardless of how humble, are considered to be of value and worthy of attention.

In the Michigan Department of Health, where I observed, each division is directly responsible to the medical director. An important feature of the organization is the close interrelationship between divisions. The ultimate programs of the entire unit are effected through teamwork wherein each specialty contributes its skills to make up the whole. An example of this can be seen in the nutrition work of the department.

The nutrition consultant assists the Maternal and Child Health Department in classes for mothers attending the Well Child Conferences, insofar as instruction regarding proper dietary habits is concerned, and the nutritionist cooperates with the Nursing Division by participating in in-service education and consulting with nurses in nutrition problems.

During the school year, she and the sanitary engineer visit schools where lunch programs are in effect to help in maintaining an adequate feeding program from the sanitary engineering viewpoint as well as from that of nutrition education. The educational director and the nutritionist also collaborate in the development and distribution of educational material for use by nurses, teachers, parents, and homemakers.

Thus, each division of the health department functions as a fraction of the whole, working in close cooperation with every other division. The talents of many are utilized for the benefit of all members of the community, not just those less fortunate who have not had the advantages of education or monetary security.

In other countries, where a higher incidence of disease and poor living conditions are characteristic, the few trained public health workers are faced with tremendous problems of disease control which preclude the development of many of the constructive activities of public health personnel in the U. S.—*Audrey Johnson, Chilean Student in Public Health Nutrition, Michigan State College, East Lansing.*

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Roasting Meat at 250°F.[1]

OPAL D. STECH and GENE M. WEST

School of Home Economics, University of Massachusetts, Amherst

It has been demonstrated that meat cooked at low temperature (325°F.) yields more servings with greater eye appeal and retention of nutrients than meat cooked at higher temperatures. Few institutions, however, have experimented with roasting meats at temperatures as low as 250°F. According to a study done at the University of Texas (1), a temperature of 250°F. was satisfactory, provided the roasting time was lengthened accordingly. Less fuel was also used, despite the longer roasting time.

In one food service unit at the University of Massachusetts, a limited study during the past school year has been made of meat cooked at 250°F. Roasts of six different types of meat were weighed before and after trimming and again after roasting to determine shrinkage. Total pan drippings were also measured.

The following procedures were used in this study to assist in reducing the cooking time:

(a) A heavy fat covering was left on the upper side of the roast when possible.

(b) An attempt was made to roll shallow rather than chunky shaped roasts.

(c) Overloading of the oven was avoided. A maximum of 40 lb. per oven was maintained, with special provision for heat circulation on all sides of each roast.

(d) A rack was used for all roasts.

(e) A Tel-tru roast meat thermometer was used to determine doneness; thus meats were removed from the oven at the proper time to avoid overcooking.

Meat prepared at a 250°F. controlled oven temperature, where doneness was determined by the meat thermometer, gave a product with the following characteristics:

(a) Plump, tender, and moist meat with an appearance of a larger portion than the weight would indicate.

(b) Fat which was soft and moist as well as of good color.

(c) Good flavor characteristic of the type of meat.

(d) Roast which is easy to slice.

(e) Small volume of drippings.

Although no tests of nutritive value were attempted in this study, it is logical to expect that the more juices retained in the meat, the greater would be the retention of minerals and vitamins.

The meats used in this study, the internal temperatures attained as a measure of doneness, the average roasting time, and the shrinkage due to roasting are given in the accompanying table.

Shrinkage in some instances was greater than anticipated, possibly due to poor-quality cuts, but even then, it was less than for similar cuts roasted at higher temperatures.

The regular cook worked with one of the authors in preparing the meat, and his cooperation convinced him of the advantages of low-temperature cookery. It is anticipated that similar procedures may be adopted in other campus food units.

It is evident that studies such as this are necessary not only to determine quality of product and feasibility of the procedure, but also to convince cooks of the advisability of low-temperature meat cookery. It is anticipated that further studies will be made on this campus using controlled cuts of meat. Information from other institutions where 250°F. meat cookery is in use would be appreciated.

[1] This study was part of a graduate student project.

REFERENCE

(1) Cooking Meat in Quantity. Chicago: National Live Stock and Meat Board, 1944.

TYPE OF MEAT	AVERAGE WEIGHT OF TRIMMED ROAST	INTERNAL TEMPERATURE ATTAINED	AVERAGE ROASTING TIME	AVERAGE SHRINKAGE
		°F.	hr.	%
Beef, chuck, boned	8 lb. 11 oz.	170	6	25
Ham				
Commercially precooked				
Bone in	17 lb. 10 oz.	150	5¼	13
Bone removed	14 lb. 4 oz.	150	5½	20
Precooked in kitchen				
Bone in	15 lb.	150	5¼	16
Bone removed	14 lb. 7 oz.	150	5½	20
Lamb leg, boned	4 lb. 9 oz.	180	4½	36
Pork, fresh				
Bone in	7 lb. 8 oz.	185	5¼	28.5
Bone removed	7 lb. 2 oz.	185	5¼	33
Veal leg, boned	15 lb. 15 oz.	170	5¼	30

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Book Reviews

Hold Your Weight Losses! By Dr. Gulielma Alsop. New York: Abelard Press, 1953. Cloth. Pp. 222. Price $2.95.

According to the author, "this book is written for the overweight who have completed their reduction care. They have lost ten, twenty, forty pounds, but a further triumph yet lies before them, perhaps even harder to achieve than the initial reduction: the maintaining of a stationary body weight. They must hold their losses."

The best way the reviewer knows how to describe the contents of this book is "every day in every way." Much of the text is practically a monologue in which the author tries to talk the patient into holding his weight losses by sheer reiteration, by the power of suggestion, by bombast, by hammering away on well known facts. The author talks as if the patient could *will* his success. Possibly this is true for some patients who have lost weight successfully, but the reviewer questions whether mere statement and restatement of a fact will make it so.

The author shows real recognition of some of the problems a post-reducer will face. She obviously has dealt with overweight people and knows the many ramifications of the problem. She anticipates each excuse and problem, points it up, then attempts to offer a solution for the patient. There are many truths in the book. She takes a positive and aggressive attitude toward combating the pitfalls of holding weight loss. Parts of it might be useful to the understanding of dietitians who still feel that anyone who is well instructed in the diet should be able to reduce. One wonders if, in the author's practice, she found that the emotional problems of reducers could be handled simply by explanation and by positive suggestion. It is the reviewer's experience that such techniques help only the very slightly disturbed.

There are a number of loose scientific statements in the text and the author presents a faddist side in her discussion of processed foods, organically fertilized soil, and so on. Her knowledge, or at least presentation, of food values in the chapter on "What You Should Know about Food Values" is both woefully inadequate and inaccurate. The final chapter, on well-established reducing diets (the "Hollywood" high-protein diet, the "Physical Culture" citrus fruit diet, the milk diet, and the mixed, low-calorie reducing diet) is unworthy of modern dietetics.

A large part of the book is about achieving the right state of mind to reduce. From the title of the book, this has presumably already been accomplished.—*Charlotte M. Young, Ph.D., Professor of Medical Nutrition, School of Nutrition, Cornell University, Ithaca, New York.*

Food Service—A Master Plan. By Kelly G. Vester. New York: Pageant Press, 1953. Cloth. Pp. 152. Price $3.

This book, although small, is a rather "wordy" discussion that would be more readable if greatly condensed. The man who *didn't* come to dinner is the focus of the discussion, and Mine Host (the author) analyzes the reasons for his absence. Mr. Vester, who is a public health sanitarian with the North Carolina Health Department, proposes a three-point master plan for building business with the keynote being hospitality: (a) progressive thinking, (b) determined action, and (c) perpetuation of the first two.

He deals with various phases of patron satisfaction: atmosphere, menu, sanitation, advertising, employee recruitment and training, physical plant, industry-sponsored education, and so on. One chapter enumerates 150 "don'ts" for food service personnel, with emphasis on sanitary practices. The author also editorializes on his concepts of the functions of an industry association.

The food service business is the third largest in America, with ½ million eating establishments employing 1½ million people and serving 65 million patrons at least one meal a day. This makes a total of 24 billion meals a year. But, a vast number of home diners are still not bringing their hard-earned cash to a meal-time rendezvous with an establishment of the public food industry. It is the author's thesis that many could be lured to do so if respect and admiration for food services can be developed. When public skepticism disappears, the industry will be assured of a destiny of growth, and "Let's eat out" will truly be the meal-time cry along the highways and byways.—*Frances B. Floore, The Berkeley, Neenah, Wisconsin.*

Mother and Baby Care in Pictures. 4th edition. By Louise Zabriskie, R.N. Philadelphia: J. B. Lippincott Company, 1953. Cloth. Pp. 244. Price $3.

This fourth edition of a standard work represents many changes to bring it up to date, including a new and more logical organization. The material includes information on nutrition, natural childbirth with exercises, rooming in, demand feeding, early ambulation, postnatal care of the mother, and the physical and emotional development of the baby. The mechanism of labor and delivery have been explained more fully, and the information on the immediate care of the newborn baby has been brought up to date.

The section on nutrition includes the Recommended Dietary Allowances for pregnancy, tables on the functions and sources of minerals and vitamins, and a table on the percentage of daily needs supplied by average servings of a number of common foods.

RECENT BOOKS RECEIVED

Biochemistry and Physiology of Nutrition. Vol. I and II. Edited by Geoffrey H. Bourne and George W. Kidder. New York: Academic Press Inc., 1953. Cloth. Vol. I: Pp. 569. Price $13. Vol. II: Pp. 641. Price $15.

Handbook of Dietetics for Nurses. By Catherine F. Harris, S.R.N. London: Baillière, Tindall and Cox, 1953. Cloth. Pp. 196. Price $4 (distributed in the U. S. by the Williams and Wilkins Company, Baltimore, Maryland).

Salt and the Heart. By Edward T. Yorke, M.D. Linden, New Jersey: Drapkin Books, 1953. Cloth. Pp. 83. Price $3.50.

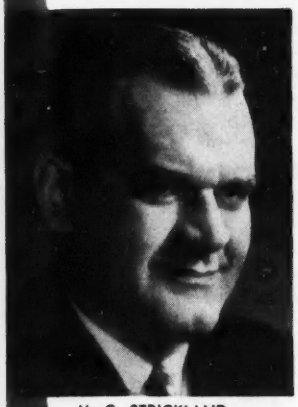
Principi Fondamentali di Dietetica Medica. By Prof. Luigi Travia. Firenze (Florence), Italy: Vallecchi Editore, 1953. Paper. Pp. 451. Price: Peso gr. 520; prezzo L., 1300.

Food Poisoning and Food Hygiene. By Betty C. Hobbs, Ph.D. London: Edward Arnold & Company, 1953. Cloth. Pp. 174. Price $3.50 (distributed in the U. S. by St. Martin's Press, New York City).

Nutritional Studies in Adolescent Girls and Their Relation to Tuberculosis. By Joseph A. Johnston, M.D. Springfield, Illinois: Charles C Thomas, 1953. Cloth. Pp. 320. Price $7.50.

Diabetic Care in Pictures. 2nd edition. By Helen Rosenthal and Joseph Rosenthal, M.D. Philadelphia: J. B. Lippincott Co., 1953. Cloth. Pp. 164. Price $3.

NEW FACES...



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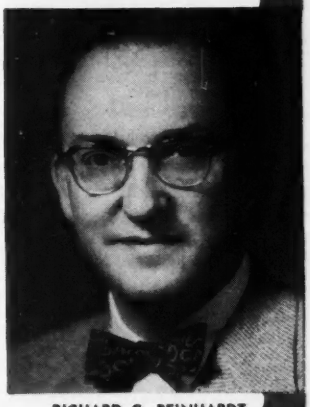

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Our Representatives Report . . .

National Commission on Accrediting

A.D.A. Representative:

Violet K. Wallfred
Dietetic Representative
Veterans Administration
Washington, D. C.

In Washington, the National Commission on Accrediting met on October 23 to acquaint the professional groups represented with the practices and problems in accrediting colleges and universities. The various organizations were urged to cooperate with the six regional accrediting associations.

Today colleges and universities encounter many problems because of the number of specialized groups (professional and others) which are accrediting institutions. In reviewing practices, the Commission points out that there is much regimentation, standardization, duplication, and excessive cost in accrediting.

Although The American Dietetic Association approves internships, it is not an accrediting agency for colleges and universities which prepare students to qualify for dietetic internships. In this respect, it is already conforming with the Commission's wishes that professional organizations employ other means than accrediting for improving a field of interest.

National Citizens Committee for the World Health Organization

A.D.A. Representative:

Marie C. Wojta, Chief
Dietetic Service
Veterans Administration Hospital
Bronx, New York

On November 9, the First Annual Meeting of the National Citizens Committee for the World Health Organization was held in New York City. This organization was established in 1951 primarily to interest citizens of the U. S. in the program of the World Health Organization.

Much of the discussion was concerned with such organizational problems as finance, policy, and procedure.

In pointing out the services available to any nation desiring it (UN aid, U. S. Point IV, and so on), the need for joint cooperation among all nations in the pooling of scientific ability was stressed. The hampering and delaying effects of security checks as they affect the execution of available services was also discussed.

One point of discussion concerned the question of over-population of the world. In speaking from the floor, a physician stated that the effect of malnutrition is increasing and is responsible for the death of many persons. This point of view was challenged by Dr. Abel Wolman, Johns Hopkins University, who explained that statistics on deaths due to malnutrition are based on standards established by the U. S., and therefore should not be used in generalizing about malnutrition in the rest of the world as a cause of death.

International Agricultural Economics and FAO

A.D.A. Representative:

Doris Boyle Thompson
Dietetic Service
Veterans Administration
Washington, D. C.

On November 6, the National Conference on Non-Governmental Organizations on FAO (Food and Agriculture Organization of the United Nations) met in Washington.

This organization is broadly representative of the American people with educational, professional, civic, religious, consumer, business, labor, women's cooperative, forestry, fisheries, and farm organizations represented. Although the farm organizations play a major role in the work of the National Conference, many consumer organizations are participating. The 140 organizations cooperating with the Conference represent 70 million of the American people.

In operation, the National Conference has three major functions: (a) to keep the American people informed of the objectives and work of FAO and of U. S. participation in FAO affairs; (b) to advise the U. S. government on U. S. participation in FAO activities; and (c) to recommend policies and programs for FAO to the U. S. government. Committee and subcommittee structure of the Conference is made up to consider special problems, such as nutrition and home economics, marketing and distribution, surpluses, expanded technical assistance programs, and the regular work of FAO.

The meeting in November was concerned primarily with the funds to carry on the work of the Conference and a discussion of the 1954 FAO Conference in Rome.

A report was made of the world agricultural picture today, including food shortages and famine, and the part the U. S. has played in this phase of FAO's work to alleviate privation. The possibility of setting up a financial reserve to serve as an emergency fund was discussed. Such a plan, as now proposed, would involve contributions from various governments, according to their means.

Forecasts of world agricultural output in 1954 and 1955 were also presented.

FDA Hearings on "Dietetic Foods"

A.D.A. Representative:

Rosemary L. Lodde
Dietetic Service
Veterans Administration
Washington, D. C.

On December 15 and 16, a public hearing by the Food and Drug Administration on labeling of food purporting to be for special dietary purposes was held in Washington. Exhibits included labels of companies now making such products, the results of surveys by the FDA comparing information on labels and results of chemical analyses; and "low-sodium" cook booklets. All witnesses who testified recommended that labels for low-sodium foods should state the number of milligrams per 100 gm. plus the number of milligrams per serving or unit.

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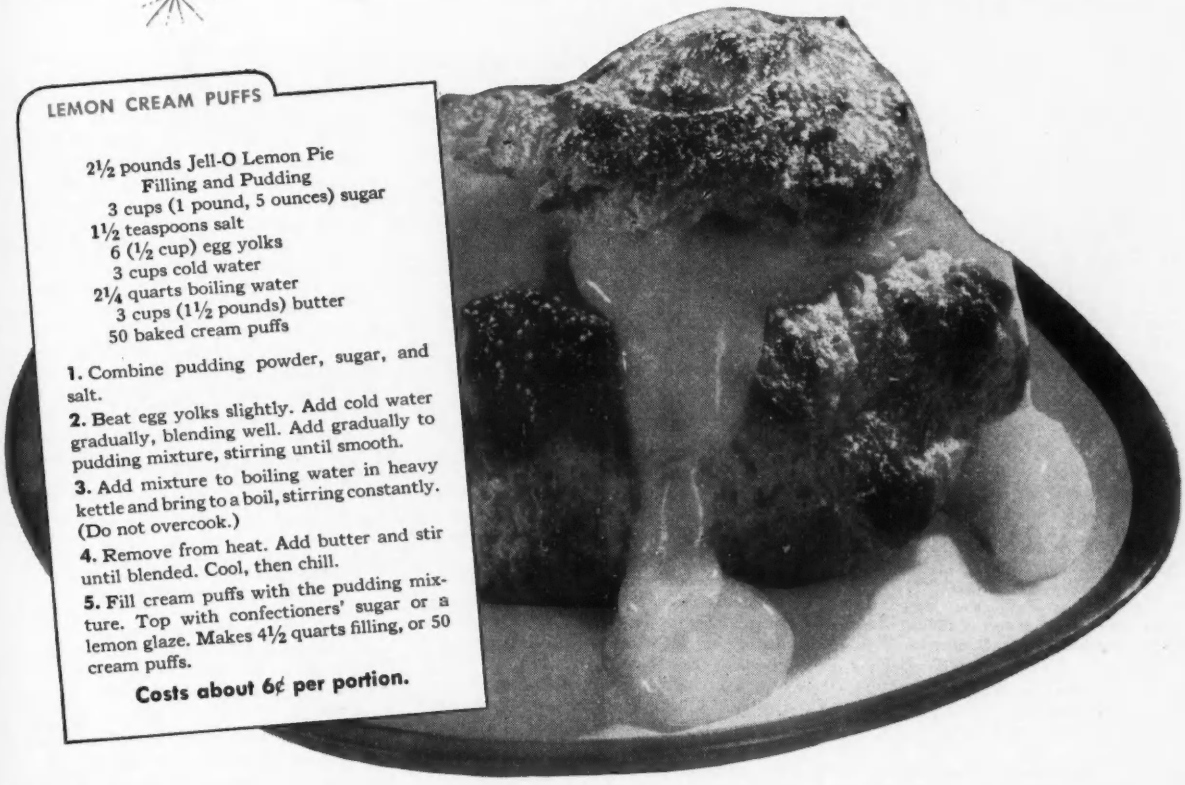

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2½ pounds Jell-O Lemon Pie Filling and Pudding
3 cups (1 pound, 5 ounces) sugar
1½ teaspoons salt
6 (½ cup) egg yolks
3 cups cold water
2¼ quarts boiling water
3 cups (1½ pounds) butter
50 baked cream puffs

1. Combine pudding powder, sugar, and salt.
2. Beat egg yolks slightly. Add cold water gradually, blending well. Add gradually to pudding mixture, stirring until smooth.
3. Add mixture to boiling water in heavy kettle and bring to a boil, stirring constantly. (Do not overcook.)
4. Remove from heat. Add butter and stir until blended. Cool, then chill.
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Current Literature

Contributed by Mildred Bonnell and administrative dietetic interns, University of Washington, Seattle; Janette C. Carlsen and Ethel M. Miller, The Johns Hopkins Hospital, Baltimore; Elizabeth H. Tuft, Wesley Memorial Hospital, Chicago; and the Journal staff

AMERICAN JOURNAL OF PUBLIC HEALTH

Vol. 43, November, 1953

* Animal diseases transmissible to man. O. Sussmann.—p. 1423.

Animal Diseases Transmissible to Man. With the notable reductions which have taken place in many diseases spread from man to man, the relative importance of certain infections which may be spread from animals to man becomes greater. These diseases may be spread by direct contact with an infected animal, by contamination of human food through discharges of animals, by transmission from the infected animal via an insect or rodent host vector, by contamination of air and water, and by consumption of infected animal products in the form of milk, meat, and eggs. Salmonellosis is a particularly interesting bacterial disease of animals which affects many animal species and birds. It is normally spread to man by food, such as eggs or meat from infected animals or poultry which have not been cooked sufficiently to kill the organisms. Since many of these disease organisms may be transmitted to human beings by means of the environment, one of the best ways to eliminate the greatest source of contamination is to eliminate the disease in the host animal population. Reference is made to some of the most important of the zoonoses with some mention of the mode of spread to man.

AMERICAN JOURNAL OF SURGERY

Vol. 86, November, 1953

Classification and treatment of children with severe chronic constipation. O. Swenson.—p. 497.

ANNALES MEDICINAE EXPERIMENTALIS ET BIOLOGIAE FENNIAE

Vol. 31, Supplementum 8, 1953

* The keeping quality of cow's milk and mother's milk. Investigations with reference to temperature, heat treatment, changes in flavour and pH, and the lysozyme content. E. Seleste.

Breast and Cow's Milk Compared. Comparison of cow's milk and breast milk is the subject of this entire issue. Samples of both types of raw milk were stored at room temperature and in refrigerators. The breast milk kept better at higher temperatures (18°, 20°, and 37°C.), while the cow's milk kept better at refrigerator temperature. The same results occurred with samples which were inoculated with *Streptococcus lactis* and kept under similar conditions. Study of pasteurization methods indicated that cow's milk keeps best when high-temperature short-time pasteurized, while breast milk fares better with holder-time pasteurization. No correlation between flavor and pH of milk was found, and flavor alone is not an adequate criterion for judging the quality of milk. Breast milk contains ample quantities of lysozyme, while cow's milk contains very little if any. This lysozyme possibly contributes to the keeping quality of both raw and holder-time pasteurized breast milk.

ARCHIVES OF INTERNAL MEDICINE

Vol. 92, November, 1953

* Therapy of ascites in patients with cirrhosis of the liver. A. L. Bloomfield.—p. 603.
* Oral use of hydrocortisone (compound F) in treatment of sprue. D. Adlersberg, H. Colcher, and C. Wang.—p. 615.
* Glucagon, the hyperglycemic agent in pancreatic extracts. I. J. Pincus and J. Z. Rutman.—p. 666.

Therapy of Ascites in Cirrhosis. The factors influencing formation of ascites are: portal hypertension, hyperpermeable vascular endothelium, antidiuretic influences, inability to excrete sodium, and low colloidal osmotic pressure of plasma. A low-sodium diet is usually prescribed to offset salt retention. If fluid collects in the peritoneum despite the sodium restriction, this treatment should be discontinued. Serious and even fatal sodium depletion and electrolyte imbalance may follow paracentesis after a period of low-sodium intake.

Hydrocortisone (Compound F) in Treatment of Sprue. The role of the adrenal cortex in the mechanism of intestinal absorption and in the etiology of sprue has been extensively studied but has not been satisfactorily established. Anatomical changes of the adrenal cortex described in sprue are essentially those of atrophy, such as may be found in emaciation and malnutrition. Nevertheless, clinical observation supports the concept that diminished adrenocortical reserve may play a role. Seventeen patients with the sprue syndrome were treated orally with the free alcohol of hydrocortisone. Clinical remissions occurred promptly in all cases, but symptoms recurred unless a small maintenance dose was continued.

Glucagon in Pancreatic Extracts. Evidence is presented that glucagon can be extracted from the pancreas and is probably secreted by it into the pancreatic venous blood. Glucagon raises the blood sugar level by releasing glucose from hepatic glycogen and apparently acts as an adjunct rather than as an antagonist to insulin. This factor may modify the response of a patient to insulin and possibly to other regulating hormones and may account for some hitherto unexplained phenomena in the diabetic patient.

BRITISH MEDICAL JOURNAL

No. 4844, November 7, 1953

* The new insulins—lente, ultralente, and semilente. I. Murray and R. B. Wilson.—p. 1023.

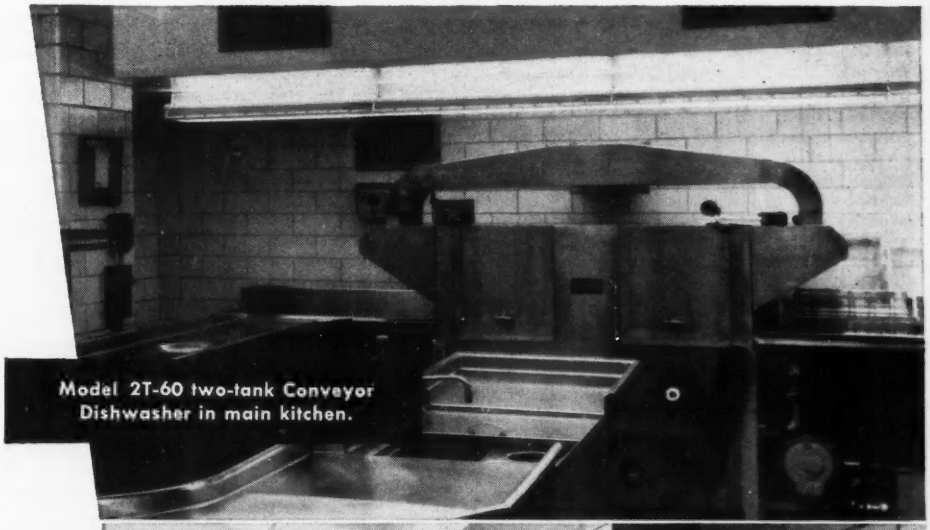
New Insulins. Three new insulin preparations have been devised in Copenhagen. Twenty-eight patients were studied; the control obtained in 14 patients was better with these new insulins; in 7, equally good; and in 2, definitely worse. *Lente* insulin appears to have action similar to that of a mixture of soluble and protamine zinc insulin and thus eliminates the trouble of making a mixture. *Ultralente* was found to have a more prolonged action than that of protamine zinc insulin, but when used alone, it rarely effected control in the early part of the day. It has the advantage that a small dose of semilente can be added without losing the effect of the latter, thus avoiding the need of separate injections. *Semilente* appears to have an action similar to that of soluble insulin. There was complete absence of local allergic reactions with the new insulins. It is advised that lente and ultralente insulins be made available for general use, thus rendering unnecessary the use of globin and protamine zinc insulins.

THE CANADIAN MEDICAL ASSOCIATION JOURNAL

Vol. 69, November, 1953

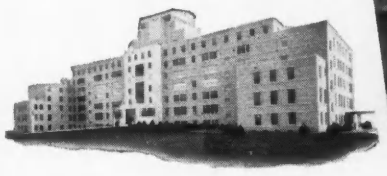
* Sodium concentration in drinking water and other fluids and its significance in restricted sodium intake. M. H. Ferguson and L. A. Kay.—p. 495.

Sodium in Water and Other Fluids. The sodium in water may limit the effectiveness of low-sodium regimens, because drinking water is often overlooked as a source of sodium and may contain enough to nullify the results of the controlled intake in the solid part of the diet. Furthermore, low-sodium foods may gain sodium from the water in which they are boiled. The canning industry has recognized the new field for low-sodium products and is carrying on extensive investigations in canning practices to eliminate sodium contamination from water. Water containing over 100 p.p.m. is unacceptable for canning low-sodium foods. The advantages of water-softening processes in added comfort, economy of soap, and labor saving



Model 2T-60 two-tank Conveyor Dishwasher in main kitchen.

Model C-2-A Conveyor Dishwasher in cafeteria kitchen.



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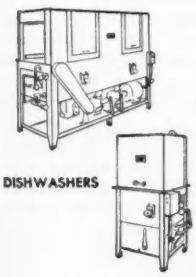

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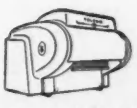

STEAK MACHINES

have led to their widespread use in domestic, industrial, and some municipal supplies. These processes add considerable quantities of sodium to the water. Commercial carbonated drinks, including beer, have various electrolyte contents. It seems advisable to check on all water used by patients on restricted intakes of sodium to be sure that the natural water is low in sodium or that no water is used which has undergone a water-softening process. Distilled, deionized, or spring water of low sodium content may be substituted whenever the water source has a high sodium content.

FOOD RESEARCH

Vol. 18, September-October, 1953

* A comparison of the retention of vitamin A in margarines and in butters based upon bioassays. H. J. Deuel, Jr.—p. 497.
* The retention of preformed vitamin A and carotene in margarine based upon physico-chemical assays. D. Melnick, F. H. Luckmann, and H. W. Vahlteich.—p. 504.
* The amino acids in various tissues of citrus fruits and in orange protein. P. M. Townsley, M. A. Joslyn, and C. J. B. Smit.—p. 522.
* The sugar and ascorbic acid content of papayas in relation to fruit quality. K. J. Orr, H. Denning, and C. D. Miller.—p. 532.

Vitamin A Retention in Margarine and Butters. A study was made of the speed at which vitamin A is lost from margarines and butters at various temperatures for extended periods of time. The results, obtained by bioassay, showed that the vitamin A retention in margarine was, on an average, in excess of 75 per cent of the original content, even after storage for two years at 14°F. Seven of the eight original samples of margarine contained more than the 33 U.S.P. units vitamin A per gram required by federal law. This held true after two years at 14°F. and one year at 41°. No differences were noted in the retention of vitamin A in margarine whether it was added in the form of alcohol or distilled or natural esters. Original vitamin A levels in the butter samples averaged 55.5 U.S.P. units per gram. The vitamin A retention of butters during storage at the several temperatures was usually slightly less than in the margarines.

Vitamin A and Carotene Retention in Margarine. The retention of vitamin A in margarine during the shelf life of the product under practical conditions of storage was studied. The evaluation was carried out using physico-chemical assay methods of demonstrated reliability. Results showed that fully 97 to 98 per cent of the vitamin is retained during the shelf life of the product when held under refrigeration (45°F.); and it still averages over 90 per cent when kept at room temperature (75°F.) for one month. Evidence was presented that in margarine prepared with cultured milk, conversion of vitamin A to the biologically inactive anhydro vitamin A can be responsible for the somewhat erroneously high vitamin A estimate by the colorimetric test procedure.

Amino Acids in Citrus Fruits. Paper partition chromatographic analysis of the alcoholic citrus extracts of late Valencia oranges, early green Washington Navel oranges, late grapefruit, and tree-matured Eureka lemons showed the presence of the following free amino acids: asparagine, aspartic acid, glutamic acid, serine, threonine, alanine, proline, γ-amino butyric acid, valine and phenylalanine. Those found in some extracts and not in others were lysine, arginine, glutamine, α-amino butyric acid, tyrosine, and one or more unknown members of the leucine group. The proteins isolated from the peel and chromatophores of the Valencia orange were believed to be identical with respect to the amino acids found. No qualitative changes in the free amino acids occurred during browning in the Valencia or Washington Navel orange juice.

Sugar, Ascorbic Acid, and Papaya Quality. Over an eleven-month period, samples of Solo papaya, Line No. 5, were analyzed chemically for ascorbic acid, total sugars, moisture, and *p*H values. They were scored subjectively for color, texture, flavor, degree of sweetness, and general opinion by an experienced taste panel. Ascorbic acid, total sugars, and the organoleptic scores for color, flavor, sweetness, and general opinion showed significant monthly changes. Texture scores showed no significant differences by month. The best quality fruit appears to be available from May through November when sugar and ascorbic acid contents are highest. The position of fruit on trees within months was highly significant for total sugars, but not for ascorbic acid values, color, texture, flavor, sweetness, and general opinion.

THE JOURNAL OF THE AMERICAN MEDICAL ASSOCIATION

Vol. 153, November 28, 1953

* Human brucellosis caused by Brucella abortus, strain 19. W. W. Spink and H. Thompson.—p. 1162.
* Excessive vitamin A and congenital abnormalities. —p. 1176.

Brucella Abortus. Two veterinarians became ill after the accidental introduction of *Brucella abortus*, strain 19, into their tissues. In one, the illness was associated with marked hypersensitivity to Brucella. The organism was isolated from the blood stream of the patient and identified as *Brucella abortus*, strain 19. This is the first recorded instance in which such bacteriologic proof has been accumulated showing that human brucellosis can be induced by strain 19. This report does not call for restriction of immunization programs for bovine brucellosis, but emphasizes that strain 19 should be handled only by qualified persons.

Excessive Vitamin A and Congenital Abnormalities. Experimental studies have shown that lack of vitamin A during pregnancy results in widespread structural abnormalities in the young. Recently it has been found that excessive intake of vitamin A also caused congenital defects. Female rats were studied after having been mated; 100 received orally 35,000 I.U. vitamin A per day until the sixteenth day postcoitus, while 50 control animals received no extra vitamins. Of the animals in the control group, 88 per cent had successful pregnancies, while only 10 per cent of the rats receiving excessive vitamin A did. Fifty-eight per cent of the offspring of mothers receiving excessive amounts of vitamin A showed congenital defects. This suggests that there is an optimal range of vitamin A, just as for other dietary essentials.

THE JOURNAL OF THE CANADIAN DIETETIC ASSOCIATION

Vol 15, September, 1953

* Dietetics—old and new. E. N. Todhunter.—p. 13.
* Methods of effective management. I. Robinson. —p. 27.
* Food cost control. D. Spence.—p. 35.

Dietetics—Old and New. The history of dietetics is traced from the days of Hippocrates' guesswork through the development of the natural sciences to the present. However, present-day knowledge has not yet resulted in a nation of well fed, healthy human beings; thus the future holds further opportunities for the advancement of dietetics. To continue these advances, the dietitian must: maintain professional leadership, adapting to the times her standards of training along both scholastic and practical lines; keep herself fully informed on research as it progresses; know how to teach so that others may benefit from her nutritional knowledge; and see dietetics not only in relation to her community but as a world-wide problem.

Methods of Effective Management. It has been estimated that 90 per cent of the manager's job on any level is handling human beings. For dietitians, the management challenge is to provide the best possible food and service at the lowest possible cost consistent with the scientific techniques of operation and management. Dr. Charles Prall made a limited field study of the working schedules of qualified dietitians in hospitals and found that the chief dietitian's main task was one of management. He points out that the essentials of good management are planning and supervision. By planning and delegation of duties, the qualified dietitian can contribute her professional skills to the greatest advantage without exhausting her energy on routine duties. Through planning and supervision of personnel and by utilizing equipment effectively, control can be used to improve quality and maintain costs.

Food Cost Control. A medium-size restaurant is used as an example for food cost problems. An analysis of costs shows that the largest single expense is for ingredients. To keep this cost at its estimated 38 per cent of total expenses, control must be maintained at the time of purchasing, storing, preparing, and serving of food. This can best be done by keeping records of purchases and waste; having adequate storage space; having an efficient, fully mechanized kitchen which reduces labor cost and loss of food through peeling and shrinkage; and the setting up of a central weighing department so that all portions are

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standard. Since food cost control is not static, it must be carried on continuously at every phase of the operation.

JOURNAL OF CLINICAL INVESTIGATION

Vol. 32, November, 1953

* The influence of glucose, fructose, and insulin on the metabolism of leukocytes of healthy and diabetic subjects. S. P. Martin, G. R. McKinney, R. Green, and C. Becker.—p. 1171.

Glucose, Fructose, and Insulin. Leukocytes from healthy individuals produce more lactic acid from glucose than from fructose, and fructose increases the glucose utilization. This difference is abolished by grinding the cells. Leukocytes from diabetic subjects produced more lactic acid from fructose than from glucose. In the healthy subject, insulin had no measurable effect on the lactate production of the cell, while in the diabetic person, it produced a significant increase in lactate formation with glucose but not with fructose. The utilization of glucose was significantly increased by insulin in the diabetic group but not in the control group. Cell injury blocked the hormone effect.

JOURNAL OF HOME ECONOMICS

Vol. 45, November, 1953

* Hurdles to good food practices. C. Tucker and R. Loree.—p. 654.
* Antioxidants in the home preservation of foods. F. Hanning, L. M. Rice, J. A. Shands, W. Batterman, and R. Bray.—p. 660.
* Home processing of frozen and canned apple slices. E. H. Dawson, O. A. Hammerle, and M. Smith.—p. 663.

Poor Food Habits. A study made in seventy-five homes in a rural, southeastern Louisiana community revealed that poor food habits prevailed. Families' diets were typically deficient in fruits, vegetables, and butter, but were more than adequate in meat, meat substitutes, bread, flour, and cereal.

Antioxidants for Home Use. The value of antioxidants in home-prepared lard and sausage was studied. Average storage life for lard to which hydrogenated vegetable shortening with cream of tartar had been added was 5.7 months longer than for untreated lard. Storage life when NDGA (a commercial compound) was used was lengthened even more, but this product is difficult to obtain and thus might be impractical for home use. Studies on frozen sausage indicated no advantage in adding an antioxidant, for the spices used in sausage seemed to give sufficient protective action. Also, antioxidants did not increase the storage life of frozen fish and chicken.

Treatment for Frozen and Canned Apples. To retain the best color, texture, and flavor after freezing, York Imperial apples were slightly presteamed and packed in sirup with ascorbic acid. They were next best when packed dry or presteamed in sugar with ascorbic acid or packed dry in sirup with ascorbic acid. For canning, raw pack was better for texture and flavor, and the Yorks needed no calcium salts or ascorbic acid to improve their quality.

JOURNAL OF THE INDIAN MEDICAL ASSOCIATION

Vol. 22, September, 1953

* Consumption level of depressed classes (Nonia and Chamar) in Champaran (Bihar). S. B. Lal.—p. 492.

Dietary Habits in Champaran, India. The diet of 50 Nonia and 64 Chamar families consisting of 242 and 347 persons respectively, all belonging to the rural areas, was surveyed. The survey lasted for ten days. During that time, all ingredients of the food consumed were weighed in raw state. The consumption of cereals and pulses exceeded the suggested Indian standard, but low intake of "protective foods" was observed; only one Chamar family was consuming milk, and one Nonia family was found to eat leafy vegetables. Consumption of proximate principles was adequate except for fat, calcium, and vitamin A. The diet, although reaching the target of calories, in most other respects was unbalanced.

THE JOURNAL OF NUTRITION

Vol. 51, October 10, 1953

* Effects of dietary terramycin and methionine supplements on fat and protein gains in weanling rats. E. W. Hartsook and B. C. Johnson.—p. 205.
* Riboflavin metabolism of women on controlled diets. M.-L. Wu, E. Warren, and C. Storvick.—p. 231.
* Essential amino acid composition of some common Indian pulses. P. K. Vijayaraghavan and P. R. Srinivasan.—p. 261.
* Some factors in the Chinese diet affecting carotene utilization. T.-C. Chou and A. L. Marlatt.—p. 305.

Terramycin on Low-Methionine Diets. This study was designed to test whether terramycin could "spare" the methionine of a diet slightly inadequate in this amino acid, and to test whether there is an interaction between methionine in the diet in adequate amounts and terramycin, as judged by carcass deposition of nitrogen, dry matter, and ether extract of weanling rats. Four groups of ten weanling, male rats each were fed the following diets: the basal diet; basal diet plus terramycin; basal diet plus methionine; and basal diet plus terramycin and methionine. No statistically significant effect of methionine supplementation alone was observed. Terramycin supplementation alone increased carcass dry matter gains, mainly by enhancing fat deposition. The terramycin-methionine interaction enhanced the efficiency of utilization of dietary nitrogen and depressed fat gains.

Daily Serum and Urinary Riboflavin. Riboflavin metabolism was studied in seven adult women on a controlled diet which met the recommended allowances in all known nutrients except thiamine and riboflavin. Urinary excretions of riboflavin varied from 315 to 467 mcg. per 24 hr. and ranged from 27 to 40 per cent of the intake. Based on the excretion of riboflavin in terms of micrograms of urinary riboflavin per gram of urinary creatinine, the results indicate that for two of the seven subjects, 1.2 mg. riboflavin per day may have been inadequate under these experimental conditions.

Amino Acids in Indian Pulses. The essential amino acid composition of five common Indian pulses and a legume is reported. Unlike lysine, which is the limiting amino acid for cereals, the limiting amino acids for pulses were found to be methionine, cystine, and tryptophan. This would suggest that the inclusion of sufficient amounts of various pulses in diets consisting of rice or wheat will be of high supplementary value with regard to the supply of essential amino acids to the individual. The relationship between the chemical score, essential amino acid index, and biologic value is discussed. The essential amino acid index does not seem to relate to the chemical score or biologic value; however, the correlation between chemical score and biologic value showed greater consistency with animal proteins than with vegetable proteins in general.

Carotene Utilization. Vitamin A deficiency in the Chinese results from limited intake of the vitamin carotene from vegetables which is less well utilized than preformed vitamin A from animal sources. Methods of improving the utilization were the objects of two experiments. In one the effects on carotene utilization of different oils, lecithin, and ascorbic acid were studied. In the second, differences in the utilization of carotene from three common Chinese vegetables were sought. Among the three oils commonly used in China, sesame oil in the diet produced significantly higher carotene utilization than did soybean or peanut oil. The utilization values of carotene in vegetables readily available in China—carrots, sweet potatoes, and a green leafy vegetable (woo-chei-pei)—did not differ significantly and were 35 to 67 per cent of the utilization value for crystalline carotene in the Chinese soybean-oil diet.

THE LANCET

No. 6792, October 31, 1953

Sociomedical aspects of diabetes mellitus. R. E. Tunbridge.—p. 893.

THE MILITARY SURGEON

Vol. 113, November, 1953

Infective hepatitis and homologous serum jaundice, a major source of disability among military personnel. J. F. Harris.—p. 355.

THE NEW ENGLAND JOURNAL OF MEDICINE

Vol. 249, November 5, 1953

Food poisoning. K. F. Meyer.—p. 765.

Vol. 249, November 19, 1953

* The influence of weight reduction on amenorrhea in obese women. G. W. Mitchell, Jr., and J. Rogers.—p. 835.

Obesity and Amenorrhea. Obesity and amenorrhea are commonly associated. In thirty-two obese women, resumption of normal menses occurred with weight reduction. In some cases, the reduction of weight was very slight when menses started, indicating other factors exert influence also. Basic emotional disorders that respond to formal

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NUTRITION REVIEWS

Vol. 11, October, 1953

* Fructose and invert sugar versus glucose.—p. 299.
* Lean body mass as a metabolic reference standard.—p. 301.
* Fat deficiency and endocrine function.—p. 308.
* Metabolic blocks in diabetes.—p. 312.

Vol. 11, November, 1953

Early experiences with choline—a retrospect. C. H. Best.—p. 321.
Iron deficiency in congenital heart disease.—p. 323.
* Survival on rations of low caloric content.—p. 327.
* Effect of vitamin B_{12} on wound healing.—p. 338.
Vitamin and caloric deficiencies as related to cold stress.—p. 342.
Evaluation of protein quality.—p. 347.
Exchangeable potassium in diabetes.—p. 351.

Fructose and Invert Sugar vs. Glucose. Interest in fructose and invert sugar preparations has centered principally on their potential usefulness in the treatment of patients with impaired utilization of glucose and in the alimentation of patients to whom large quantities of calorigenic material must be given intravenously. Diabetes mellitus and severe parenchymal liver disease are examples of conditions in which fructose administration sometimes may be preferable. However, even if invert sugar or fructose should prove to be retained in the body to a slightly greater extent than glucose, the advantages from the standpoint of caloric intake will be negligible.

Lean Body Mass as Metabolic Reference Standard. The preferred reference standard has been body surface estimated from height and weight. A. R. Behnke noted that "lean body mass," defined as body weight less "excess fat" and determined from specific gravity and body water determinations, can be estimated with fair accuracy from basal metabolism data. Lean body mass is a better reference standard because it is not influenced by fat, which is the most variable component of body weight. Age and sex differences in the basal metabolism of adults can be accounted for mainly on the basis of variation in the dispensable fat content. The coefficient of correlation between basal oxygen consumption and lean body mass was somewhat higher than for surface area, but the differences did not reach the 5 per cent level of statistical significance.

Fat Deficiency and Endocrine Function. An attempt has recently been made to correlate certain of the structural tissue changes in fat-deficient animals with apparent disturbances in endocrine function. After an 18 per cent protein, low-fat diet, 30 of the 100 test rats were killed while those remaining were placed in four dietary groups: fat-free; fat-free plus 20 mg. methyl linoleate; fat-free plus 40 mg. methyl linoleate; and complete laboratory chow. These animals were killed for study after ten weeks. Fat deficiency resulted in a marked reduction of acidophil cells in the pituitary and an increase in the basophils. The marked fall in acidophil in this gland, together with the resulting presence of "wheel nuclei" in the ovaries and disturbed ovulation, led to the contention that one of the important consequences of fat deficiency is a decrease in the secretion of luteinizing hormone by the pituitary gland.

Metabolic Blocks in Diabetes. One cause of disagreement as to the dietary regimen for diabetes is lack of knowledge concerning the precise metabolic function of the hormone insulin. Consequently, adequate diets for the diabetic patient have had to be determined empirically. Not until 1944 was real emphasis placed on lipogenesis from carbohydrates as a normal pathway of carbohydrate metabolism. Due to the absence of insulin, glucose, fructose, and acetate are converted to fatty acids at a slower rate in the diabetic liver. This lack also causes retardation of lipogenesis from acetate. Further experiments on the role of insulin in acetate disposition in the liver showed this hormone to have a directive influence. In its presence, more fatty acid was synthesized from acetate while relatively less carbon dioxide was produced. In its absence, lipogenesis diminished while carbon dioxide production increased.

Survival Rations and Nutrition. Studies of survival rations (low calories, with and without protein, and minimal water consumption) by the Quartermaster Climatic Research Laboratory have

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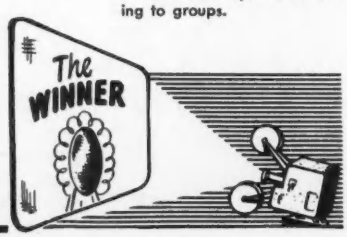

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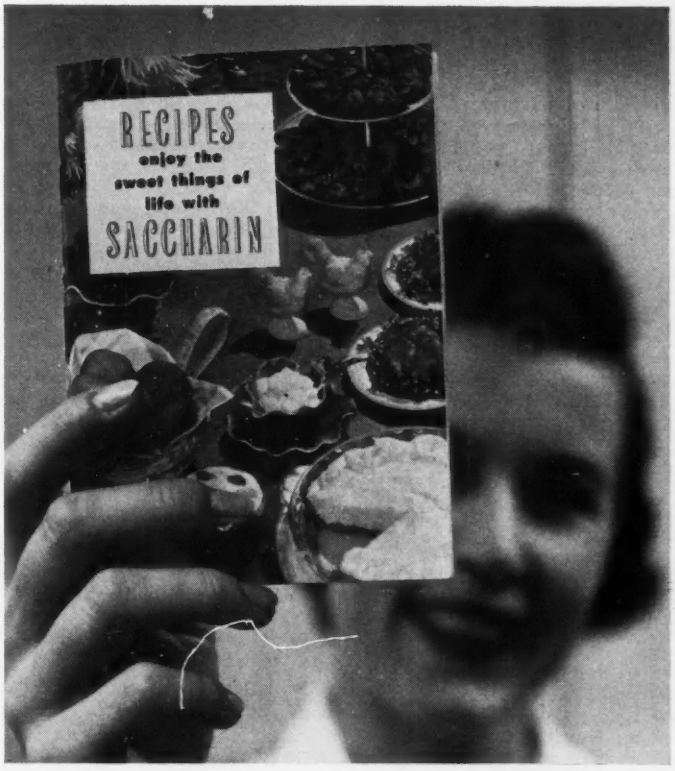

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indicated the falseness of the thesis that under conditions of semistarvation survival, the addition of protein to a protein-free ration would spare the breakdown of body protein and not increase the minimal water requirements. Added protein did not improve nitrogen balance and served, under the experimental conditions, only as an energy source. With the protein-fed men subjects, there was greater loss of water. Even with added water intake, the added dietary protein did not spare the breakdown of body protein and there was no significant difference in nitrogen balance. Losses of weight, fat, and water in men receiving rations with and without protein were similar. These experimental results indicate clearly that even moderate weight losses are anything but a simple matter. Calculations suggest that fat, protein, and extracellular fluid would account for the observed weight loss.

Vitamin B_{12} and Wound Healing. It appears under certain circumstances that vitamin B_{12} may participate in protein synthesis and act as a growth factor. Groups of rats were given high- and low-protein diets and daily intramuscular injections of isotonic saline or an equivalent amount of saline containing 0.5 mcg. vitamin B_{12} per 100 gm. body weight. Healing of the wounds of the animals receiving the high-protein diet supplemented with vitamin B_{12} was significantly better than for other groups, and healing in animals receiving only the high-protein diet without supplements was better than for those on the low-protein diet.

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PUBLIC HEALTH REPORTS

Vol. 68, October, 1953

* Sanitary quality of crushed and cubed ice as dispensed to the consumer. V. D. Foltz.—p. 949.

Vol. 68, November, 1953

* Disinfecting garbage in truck bodies by direct steam injection. H. A. Bevis, F. Tetzlaff, and F. B. Taylor.—p. 1065.

Sanitary Quality of Ice. Data are given showing that the major amount of crushed and cubed ice at the consumer level is of extremely poor sanitary quality. Evidence is presented which shows that initially ice from both commercial and automatic freezers is of acceptable quality. This indicates that most of the microorganisms found in crushed ice when it reaches the consumer have gained entrance at one or more points between the freezer and consumer. Only 10 (13 per cent) of the 77 samples of commercial crushed ice were found to be free of coliform bacteria, while 17 (46 per cent) of the 37 samples of cubed ice were free of coliform organisms. All 10 of the samples of ice collected in hospitals were free of both coliform and clostridia organisms. From the 87 samples giving positive and doubtful tests, 41 were due to *Escherichia coli* and 46 from *Aerobacter aerogenes*.

Disinfecting Garbage. Feeding of raw garbage to swine has been shown to be the primary mode of transmission of trichinosis in swine and thus is indirectly the source of human infection. Garbage can be disinfected in truck bodies by direct steam injection. However, this is not the ultimate solution to the problem due to the many possible sources of error in this type of system. It should be used only until a properly designed, built-in-place installation is available. The designs and merits of this type of garbage disinfectant are described in detail, the results being that it would not only be more sanitary, but also more economical, for the trucks would be free for more operation. Cooking also seems to make less desirable particles of garbage more attractive to the pigs.

SCIENCE

Vol. 118, November 6, 1953

Protein metabolism and interactions. R. L. Evans and D. S. Anatuzio.—p. 558.

SOUTH AFRICAN JOURNAL OF CLINICAL SCIENCE

Vol. 4, June, 1953

* Kwashiorkor. A. Altmann.—p. 71.

Malignant Malnutrition. Clinical and laboratory data are presented relating to 295 malnourished non-European children, 242 with so-called Kwashiorkor, and 43 with simple nutritional edema. Kwashiorkor is a nutritional disorder caused by overfeeding with cereal and characterized by a failure to thrive, edema, and heavy fatty changes of the liver in fatal cases. It occurs in young children who receive a diet high in car-

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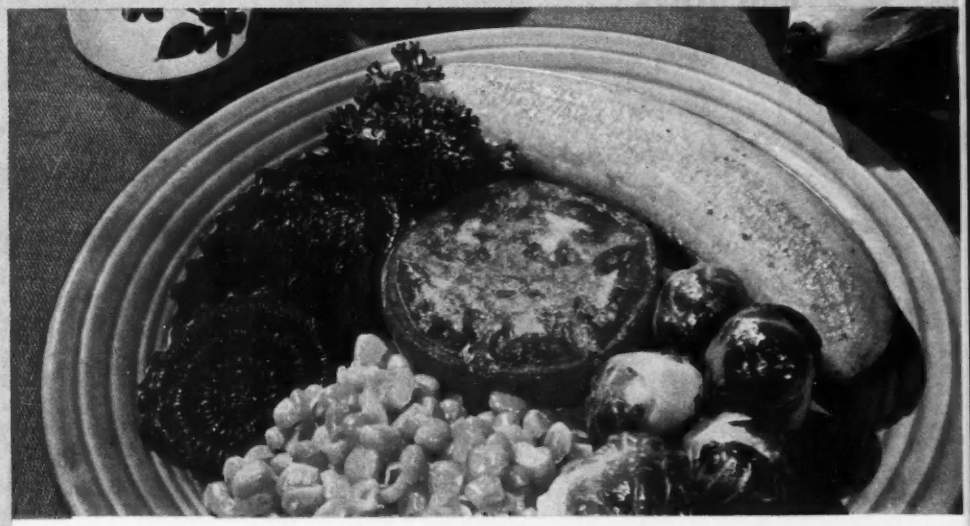
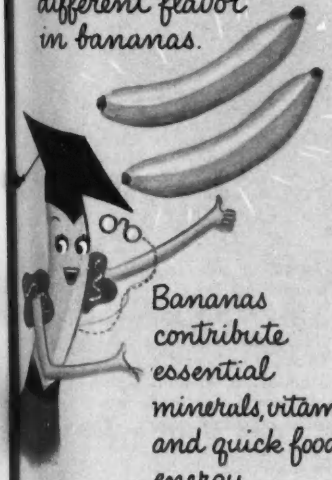


Serve hot as a vegetable or as a dessert.

Cooking brings out a new and different flavor in bananas.



Bananas contribute essential minerals, vitamins and quick food energy.

BAKED BANANAS

Amount for 1 portion: 1 banana, whole or cut crosswise	4 portions	20 portions	100 portions
INGREDIENTS	AMOUNTS	AMOUNTS	AMOUNTS
Firm bananas*	4 (1 pound)	20 (6 to 7 pounds)	100 (30 to 35 pounds)
Butter or margarine, melted.....	2 tablespoons	⅔ cup (5 ounces)	1½ pints (1 pound, 8 ounces)
Salt	as desired	as desired	as desired

***Use slightly green-tipped or all-yellow bananas**

1. Peel bananas. Place into baking pans.
2. Brush bananas well with butter or margarine and sprinkle lightly with salt.
3. Bake in a very hot oven (450° F.) 10 to 12 minutes, or until bananas are tender . . . easily pierced with a fork.
4. If browning is desired, place baked bananas under broiler heat about 1 to 2 minutes.
5. Serve hot as a vegetable or as a dessert with cream, syrup or hot fruit sauce.

VARIATIONS

BANANAS BAKED WITH CRANBERRIES: Spread cranberry sauce over bananas. Allow 3 cups sauce for every 20 bananas. Bake at 450°F. about 10 to 12 minutes. Serve hot with poultry, meat, fish or vegetables. Tart jellies, jams or marmalades may be used in place of cranberry sauce.

BANANAS BAKED WITH CURRY SAUCE: Just before baking, pour a mild curry sauce over bananas, allowing 3 to 4 cups sauce for every 20 bananas. Bake at 450°F. about 10 to 12 minutes. Serve hot with rice and pork, lamb, chicken, duck, shrimp or lobster.

BANANAS BAKED IN THE PEEL: Cut off tips of both ends of each banana. Remove a lengthwise section of peel, about 1 inch wide, from end to end. Place into baking pans. Brush exposed pulp with butter or margarine. Sprinkle lightly with salt. Bake at 450°F. about 10 to 12 minutes, until peels are dark and bananas are tender. Serve hot as a vegetable.

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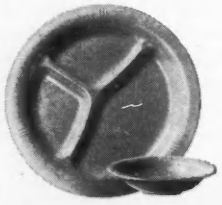

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bohydrates and low in first-class protein. The primary aim of all therapeutic measures is to correct the general state of malnutrition in these children which makes the evaluation of additional therapeutic measures more difficult, because of the therapeutic effect of the diet itself.

ADULT LEADERSHIP

Vol. 2, December, 1953

* To become a better reader. P. Witty.—p. 2.
* The questions people ask. D. Cartwright.—p. 8.
* How to diagnose group problems. Tool Kit. L. P. Bradford, D. Stock, and M. Horwitz.—p. 12.

Toward Better Reading. Reading improvement programs can help most adults gain in ability to understand and assimilate specialized materials as well as general reading ability. Improvement should lead to adaptability; some materials need only be scanned, while others merit detailed study. Vocabulary training is of great importance. In specialized reading, such as adult educational materials, the key words should be thoroughly understood. After examining one's understanding of technical terms and special vocabularies, experience and discussion will help clarify meanings and foster communication. As vocabulary strength is gained, the adult will be able to read various materials better, and his speed in reading will increase. More rapid reading allows time to read more widely in areas of special interest and also to acquire the wider general knowledge a leader usually needs in addition to expertness in his field.

Social Science and Group Behavior. The social scientist deals with group behavior problems. His role is difficult because his findings and conclusions must always be tentative, since social science consists of an endless process of exploration and reformulation. One of the social scientist's most important tasks is to collect dependable facts; another, to discover what dependable relations exist among these facts. One of his major contributions is the reformulation of the facts of group life, and an important potential contribution to the practitioner is the provision of terms for describing the phenomena with which he must deal. Technical terminology is one result of the social scientist's effort to achieve dependable general principles. Even though this terminology makes communication more difficult at first, when once understood, it makes the practitioner better able to see and interpret what happens in his groups.

Diagnosing Group "Ills." Three of the most common group behavior problems are (a) conflict or fight, (b) apathy and non-participation, and (c) inadequate decision-making. Some ways of expressing each, possible reasons, and groups of "symptoms" in terms of possible diagnoses are listed for each. Changing group behavior has three basic parts: collecting information; reporting the information to the group, i.e., "feedback"; and making diagnoses and decisions for change. A number of methods for collecting information and suggestions as to what information should be collected are described. Various methods of observation are suggested, and the "feedback" process, with cautions against errors in its use, is covered. Evaluation of information is discussed briefly in step form. If the group as a whole is to make decisions about changing its procedures or processes, then the group must assume responsibility for collaborative diagnoses of its difficulties and its effectiveness.

COLLEGE AND UNIVERSITY BUSINESS

Vol. 15, November, 1953

* Actual cost of peeled potatoes.—p. 48.

Vol. 15, December, 1953

* Snack bars can be profitable. L. Scott.—p. 48.

Cost of Peeled Potatoes. The cost of peeled potatoes includes the purchase price, the loss through peeling, and the cost of labor. Potatoes are usually purchased in sacks containing various sizes with the greater proportion being the smaller potatoes. The peeling loss in a standard abrasive type peeler was found to be greatest when the potatoes were not graded into sizes. A considerable saving could be effected if the potatoes were first separated into small, medium, and large sizes before peeling. Hand peeling is so much more expensive than machine peeling that a mechanical peeler pays for itself in a brief period.

Profits from Snack Bars. The college snack bar or fountain sells convenience along with food; some students consider a 25-cent milk shake on the premises a better buy than a 15-cent delicacy a mile away. Suggestions for financial soundness include: (a) provide adequate supervision for student workers; (b) know costs and establish prices in relation thereto; (c) fix responsibility for cash; (d) watch inventory closely; and (e) control portions. Figures are given to show how three actual snack bars operate "in the black."

FOOD ENGINEERING

Vol. 25, November, 1953

* Ray-sterilizing food wrappers. L. L. Kempe, J. T. Graikoski, and L. E. Brownell.—p. 55.
* How FDA men inspect a plant. E. L. Holmes.—p. 64.
* How to keep floors ship-shape. A. L. Sodergreen.—p. 70.
* "'Dehyd. Veg. Mix"—3-way saver. R. R. Barton and L. Trauberman.—p. 79.

Ray-Sterilizing Food Wrappers. By-products of fission processes which can be used to sterilize heat- and moisture-sensitive materials without significant damage are now being made available for gamma-radiation work. The feasibility of such a process for sterilizing food packaging materials was tested, and results suggest that large unit quantities of a rather wide variety of organic materials can be thus sterilized. For example, it might be desirable to irradiate some materials in bulk to prevent mildew damage or prepare them for special situations requiring sterile materials.

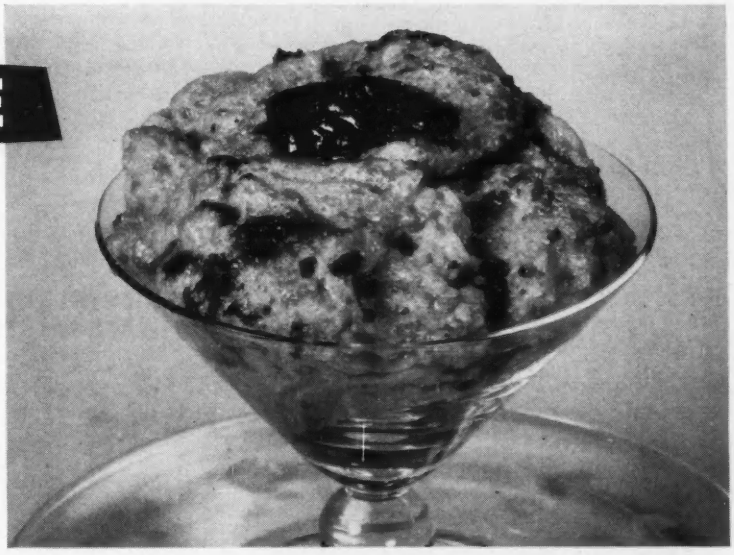
Special Diets? LET PRUNES HELP

First you prepare the diet. But then you face what is often a bigger problem—how to get the patient to *stick to it!* Here's where California Prunes are proving so especially helpful to dietitians.

Prunes' natural sweetness helps satisfy the "sweet tooth" without excess calories. And their high concentration of quickly assimilable sugars helps provide food energy to combat listlessness.

What's more, California Prunes help you maintain a *variety* of dishes and recipes. They are so easy to use so many ways.

LOW CALORIE



Prune Coffee Whip

- 1 envelope unflavored gelatin
- ½ cup cold water
- 1½ cups hot strong coffee
- 1 tablespoon liquid no-calorie sweetener
- ½ cup pitted, chopped prunes cooked without sugar (8 or 9 medium)
- Dash of salt

Soften gelatin in cold water; dissolve in hot coffee. Add liquid no-calorie sweetener and salt; chill until syrupy. Beat with a rotary beater or electric mixer until light and fluffy and doubled in volume. Fold in prunes. Spoon into sherbet glasses; chill until firm. Makes 4 generous servings.

Calories per recipe: Approximately 155
Calories per serving: Approximately 40

LOW SODIUM

Special Prune Muffins

- ½ cup chopped cooked prunes
- ½ cup granular whole-wheat breakfast cereal
- 1 cup liquid low sodium milk
- 1 cup sifted flour
- 6 teaspoons sodium-free baking powder
- 2 tablespoons sugar
- 1 egg, beaten
- 2 tablespoons salad oil or melted salt-free fat

Combine prunes and wheat cereal in bowl. Heat milk and pour over prunes and cereal. Sift together flour, baking powder and sugar. Add egg and oil to prune mixture and mix well. Stir in dry ingredients, mixing only until combined. Spoon into well-greased muffin pans. Bake in a moderately hot oven (375° F.) 30 minutes, or until done and brown. Makes 16 large muffins.

57.68 mg sodium in recipe
3.6 mg sodium in each muffin

NOTE: *For unrestricted diets use 4 teaspoons regular baking powder instead of sodium-free baking powder and add ½ teaspoon salt.*

Good eating *plus!* Don't overlook prunes' essential A and B vitamins, and their important supply of iron and other vital minerals. Still more reasons to include the "wonder fruit" *often!* California Prune Marketing Program, San Francisco, California.

So many ways to use delicious

the California wonder fruit **PRUNES**

Although the economic feasibility of the process cannot yet be properly evaluated, instances may exist in which its unusual advantages may make gamma-ray sterilization mandatory. Commercial adaptation of the process would probably involve establishment of a central sterilizing plant.

FDA Plant Inspection. According to the Food and Drug Administration, the major factors contributing to food-plant filth and poor sanitation are, in order of importance: (a) unclean human behavior; (b) vermin; (c) insects; (d) dirty equipment and utensils; (e) raw materials, water, and ice supplies in improper condition; (f) insanitary toilet and lavatory facilities, as well as their accessibility; (g) general plant structure, including surroundings; (h) waste disposal; and (i) storage and handling. When FDA's enforcement inspectors find filth, they must obtain physical evidence of conditions which may defile the finished product or endanger health and must show avenues of filth transmission to the product. In their reports, the type and trade names of those products most likely to be contaminated, as well as specific shipment of lots under suspicion, must be cited. At the end of the inspection, the inspector must outline in detail to the manufacturer the various objectionable factors which the tour has disclosed. Possible government actions resulting from inspections are briefly covered, and the author advises food-plant operators in such a situation to obtain help from a professional sanitation consultant.

Floor Care. A reference guide to cleaning, sealing, maintaining, and inspecting twelve types of flooring appears in tabular form. The author warns that today's wide variety of advice and opinions on the subject may confuse management into inertia until major revamping must be done. Figures, based on contractors' reports, show the cost of various types of new flooring.

Navy's Sauce Premix. A dehydrated tomato-type vegetable sauce premix, used in many of the Navy's recipes, has won taste-panel acceptability among servicemen. The mix, made from commercial ingredients, is prepared according to a formula given in the article. Figures on the savings in space, weight, preparation time, and stability tests for the premix are presented.

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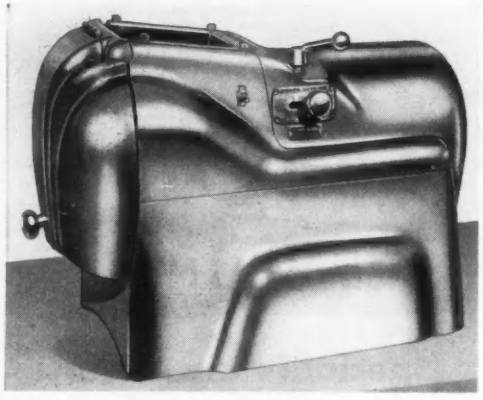

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FOOD SERVICE

Vol. 15, November, 1953

* Survey shows new interest in baking.—p. 17.
Fundamentals of good eating bread and rolls.—p. 24.
* Which is the choice?—p. 29.
* Oven profit pointers.—p. 53.
* Merchandising tips.—p. 60.

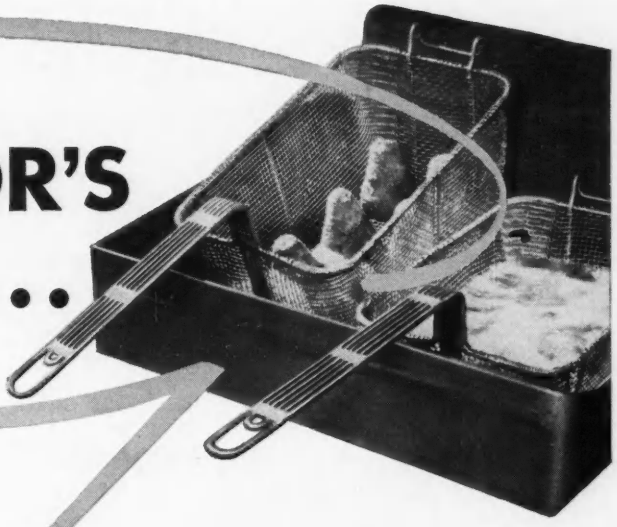
New Interest in Baking. In the past, commercial sources have supplied restaurants with pies, cakes, bread, and rolls. Now, however, the trend is for restaurants to do their own baking, due to the development of ready mixes, quick freezing, and specialized oven equipment. In producing "on-premises" baked goods, space is one problem. Another is the lack of modern equipment. Despite handicaps, the general trend of the nation is the increasing interest in "on-premises" baked goods for the profit it naturally brings.

Range Ovens vs. Separate Bake Ovens. Range ovens are designed as all-around cooking units and may be satisfactorily used for baking. However, unless the baking is done in spare moments, it can hinder work on the range top. Also the chef may need the range oven for braising or roasting. Another disadvantage is the double-rack loading which causes uneven baking. This may be eliminated, however, in small food service operations, but for larger concerns or for baking on a large scale it is wisest to have a separate baking oven.

Roasting Meat. Slow roasting requires less fuel or electricity. Meats cooked at high temperatures are more difficult to carve, thus adding to food waste. Slow-roasted meat has a better nutritive value, and, in addition, the drippings are better for soups, sauces, and gravies. Also, there is less work in slow-roasting meats because they do not have to be watched as carefully and the pans do not caramelize. It takes time for an oven to warm, and a higher temperature will not force it to warm faster. Ovens should be kept clean. Residue on the bottom is not good for pans and will result in untrue baking temperatures.

Waitresses. The waitress is the restaurant manager's contact with the

THE FLAVOR'S NATURAL...



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Naturally, your frying should be done with a fat which has no decided flavor of its own. Because food always absorbs some of the fat in the frying process.

And that's another reason why Primex-fried foods *taste* so good! At proper frying temperatures a minimum of Primex is absorbed. Your food benefits from the nutritional value of Primex, but you don't have to worry about unappetizing, grease-soaked foods.

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customer. Through her, the customer receives his impression of the establishment, the food, and the atmosphere. Therefore, it is important that the waitress be well groomed, well liked, and well informed. Not only must she know the menu, but she must know how to handle and serve food, and she must be able to handle awkward situations gracefully.

FORECAST FOR HOME ECONOMISTS

Vol. 69, December, 1953

* The use of the chalkboard in home economics. H. Fleck.—p. 32.
* The school lunch—an integral part of the school program. Part II: Its potentialities for citizenship training and social development. N. Voegele.—p. 34.

Chalkboard in Home Economics. The chalkboard's value in home economics consists in visualizing ideas, arousing student interest, and illustrating terms. The author stresses the importance of a clean dark board with legible writing, and recommends varied colors and shapes of chalk as well as patterns and projectors to aid in drawing. Humorous "chalk talks" are advocated when a lesson needs enlivening. "Do's" and "don't's," listed at the end of the article, include: "Do" experiment with the effective use of the board, and "don't" clutter the board or use it for lengthy material for students to copy.

School Lunchroom as Laboratory. Home economics teachers can make lunchtime a rewarding experience for their pupils. Opportunities for social as well as physical development should be estimated, and lunch periods should be scheduled to permit good hygiene and manners. Cleanliness and care should be used in food production, and pupils trained to appreciate it. Regimentation will not produce desirable results with modern children. One good practice is allowing each pupil to take a turn as "host" or "hostess," and another is putting them to work in the lunchroom. In the latter, high standards must be set and on-the-job training should take place. Teachers must not only be willing to share the responsibility but also be genuinely interested in fully developing the lunchroom's possibilities, because its effectiveness as an educational medium depends on sustained school and community interest.

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HOSPITAL MANAGEMENT

Vol. 76, November, 1953

* Get the "you" into personnel practices. S. V. Zimmermann.—p. 37.

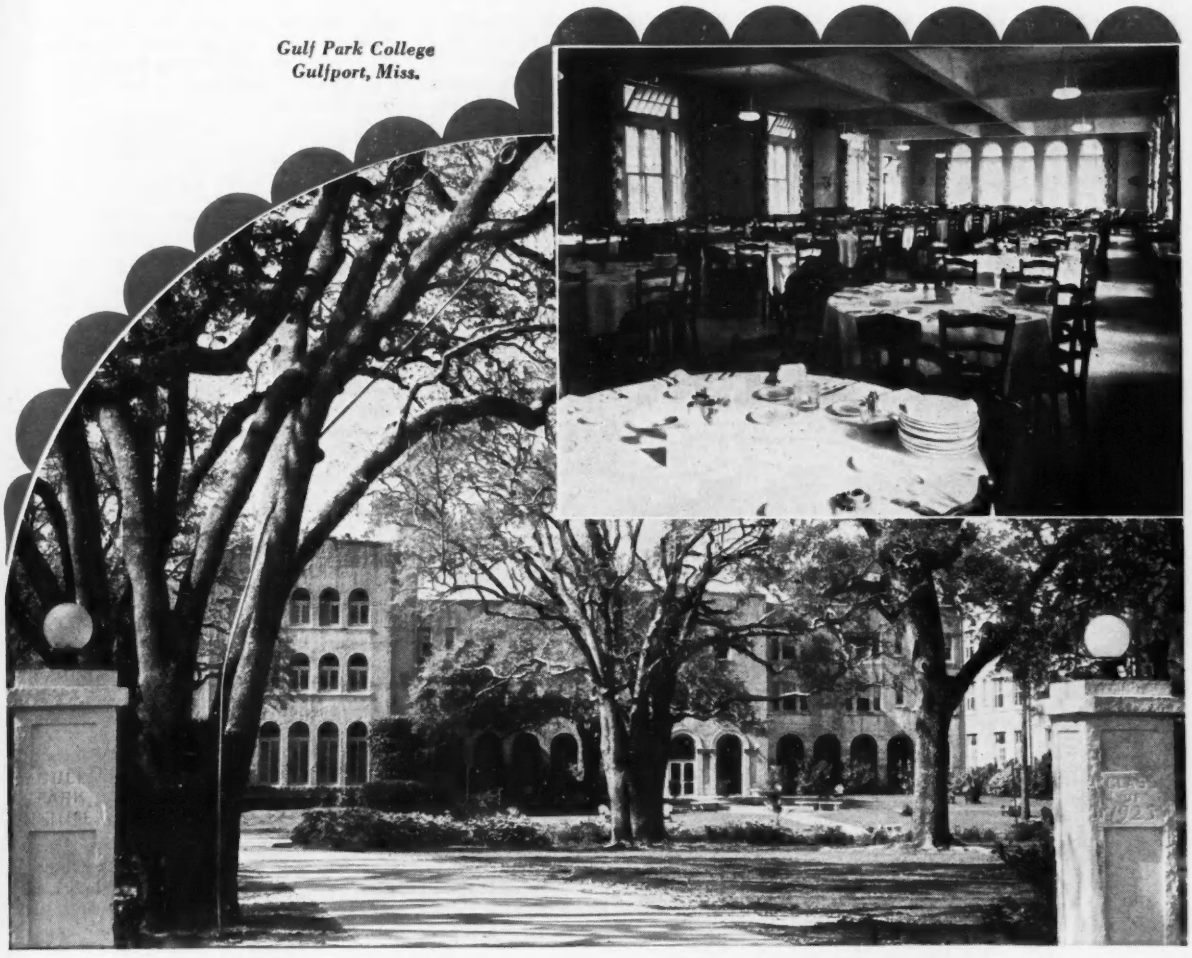
Personnel Practices. Employee activities are a real factor in building and maintaining good morale. To produce results, a wide program within the ability and interests of the employees should be offered. This will bolster their ego and make them feel they belong. The most important activities are educational projects, hobby shows and clubs, movies, picnics, dinners, and sports. Each activity carries its own weight. The personnel relations office makes periodic contacts with the leaders of each group to give promotional publicity, helps organize new groups, and gives recognition to the individual groups. This department also arranges for rooms and facilities. Recognition is a good stimulant for a group. Therefore, exhibitions, such as a hobby show, should be included in the program. Every means is used to encourage or assist personnel in activity participation.

HOSPITALS

Vol. 27, December, 1953

* Structuring an infant formula room. J. Parker. —p. 111.

Formula Room. Plans for remodeling the infant formula room at Michael Reese Hospital, Chicago, were drawn up by the pediatric and dietary staffs with the threefold objective of (a) promoting interest in the development of trained personnel; (b) application of recommended techniques; and (c) willingness to cooperate with the physician in special projects. The personnel selection and training program is described. The heads of the pediatric and dietary departments confer regularly with the medical, nursing, and dietary staffs. Mutually approved policies, which outline the major responsibilities of formula room personnel, are listed. Terminal heating is used to prepare water, tea, and formula for pediatric patients and the newborn. For premature infants, formulas are made by the sterile technique. Artificial feedings are high in protein, low in fat. Additional protein



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HOTEL MANAGEMENT

Vol. 64, November, 1953

* Food briefs. N. Greene.—p. 14.
The forgotten guest. W. O. Voegele.—p. 47.
* How to dramatize cheese dishes. A. Easton.—p. 78.

Food Developments. Experiments at the Kansas Agricultural Experiment Station show that replacing part of the sugar with honey improves the flavor, color, and texture of most baked products. It also increases moisture retention and lengthens their life. . . Experiments indicate that it may be possible to overcome the problem of keeping frozen concentrated milk from separating when it is reconstituted by removing part of the calcium. . . Milk may be kept sweet 20 per cent longer by feeding the chemical, menadione, to cows. . . Treating wrapped packages of cheese with methyl bromide gas will prevent mold spots from developing. The possible dangers of this treatment are still under investigation. . . After twenty-five years of work, a new, large-seeded, dry, edible Lima bean has been released to growers by the University of California.

Dramatizing Cheese Dishes. There are so many good and varied ways of serving cheese that the important thing is to dramatize it. Some tantalizing recipes, such as cheese and egg puffs and veal surprise fingers, are given in this article along with ten entrée suggestions, ranging from low- to high-priced, which would be valuable for menu variety.

THE HOTEL MONTHLY

Vol. 61, December, 1953

* Whether you call them yams or sweets, it really doesn't matter.—p. 52.

Sweet Potatoes. Although sweet potatoes are seldom served in any way other than candied, this flavorful and nutritious vegetable is adaptable to many dishes. They may be served as a vegetable, as an entrée, in salads, as a pie filling, or in coffee cakes. General hints on preparing and cooking sweet potatoes are given, and seven quantity recipes are presented and discussed.

INSTITUTIONS MAGAZINE

Vol. 33, December, 1953

* Foiled again!—p. 7.
* Charting menus wins over "captive patrons." E. R. Webster.—p. 22.
* Continental cuisine for quantity kitchens.—p. 68.
* Organizing formula includes duty lists, delegated authority. C. H. Broaded.—p. 72.
* Calls sanitation education necessity for safer living. W. H. Haskell.—p. 80.
* Willing hands aid recipe standardization. M. K. Cranmore.—p. 84.
* Introduce campus patrons to food service management at its best. S. M. Hartt.—p. 109.

Foods *En Foil*. Aluminum foil, in its handy new strip form, may be used for: lining oven shelves and barbecue pits for even heat distribution; covering potatoes or squash for baking and serving; lining oven dishes for the steam table; in hot dishes for hospital tray service; and keeping drive-in orders warm. An industrial feeding company is experimenting with soups, entrées, and salads hermetically sealed in aluminum foil containers, and automatic sealing equipment for these containers is being developed. Foil is also used for wrapping stored foods and as a self-baster in roasting poultry.

Banishing Menu Monotony. Institutional menu planners may avoid over-repetition of dishes by using easily kept charts devised by a Purdue University foods manager. Since 1948, these charts have been used successfully in feeding 2200 residents annually. The steps in developing a chart are: (a) Make a master list of entrées which may be used. (b) Classify them into related groups. (c) Again rework the list, showing similar dishes or variations of one dish on one line. (d) Set up chart, using cross-section paper and listing entrées. (e) Mark days of week in different colors on the chart. (f) Using a code, indicate days on which each entrée has been served. The use of the chart and the code are explained. Such a plan aids in avoiding repetition of the same dish too frequently or each week on the same day. The plan has also proved to be a time-saver, resulting in more efficient menu planning.

Quantity Old-World Cuisine. France, Italy, Austria, and Sweden have inspired five quantity recipes now

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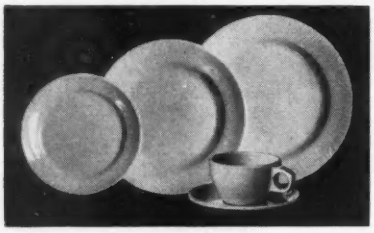

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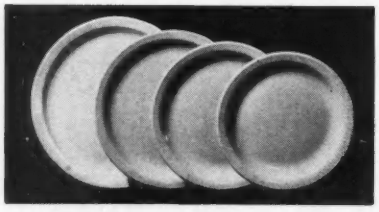

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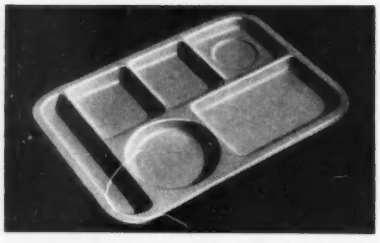

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being offered for use in American menus. A Minneapolis food company launched a European recipe service last fall, augmented with mass media publicity and successful service of the old-world dishes by a local hotel. The foods are photographed in color and described with brief historical notes.

Successful Organizing. Proper organization will provide unity of command, correct span of control, homogeneous assignments, and delegation of responsibility—with corresponding authority—for each member of the group. This article, a continuation from last month, discusses the latter two points. General agreement exists that between four and twelve duties should make up an assignment to prevent boredom while permitting the worker to perform each duty well. In delegating authority, a written list of duties and responsibilities should be made, showing to whom and for whom and what the worker is responsible. Organizing, one of management's basic functions, means setting up the "machinery" whereby a group may work effectively toward a common goal. A chart shows the work organization of a West Coast hotel with 100 employees.

Sanitation Education Programs. Sanitation, which lacks excitement, is hard to "sell." Despite all the admonitions, insects and rodents abound, many cities permit the sale of unpasteurized dairy products, and more than half the counties in the U. S. have no full-time health agencies. From a national viewpoint, supervision of meat supplies is probably the most neglected of all public health activities. A positive approach is the first element for the success of an educational program. Cooperation of all concerned is first on the list of necessities; then, the development and carrying out of the actual predetermined program can be achieved.

Recipe Standardization. This article continues the plan for standardizing recipes. A "working" file and a "permanent" index card file, with sets of separators for all classifications desired, are recommended. Sources for simplification of recipe work are suggested, i.e., commercial food companies, government bureaus, and business and professional groups, and the addresses of some of these are given, as well as a short bibliography of articles and books on quantity recipes. Commercial food companies issue literature on new food products which can be filed, and some also send advisory technicians who periodically put on demonstrations in institutional kitchens.

Campus Food Service. Suggested qualifications for men's and women's residence hall food managers are given. A meal pattern is suggested, and the Recommended Dietary Allowances for the college age group are given. Principles for menu variety, interest, and economy are: (1) plan menus in advance, adjusting daily if necessary; (2) use a meal pattern; (3) include the "Basic Seven" foods; (4) have a system for planning to avoid monotony; (5) consider the group's food habits and preferences; (6) plan to use seasonable, available, and suitable foods; (7) plan relatively simple menus; (8) plan for variety in texture, flavor, and color; (9) plan as liberal a menu as the budget will allow; (10) include foods which will satisfy the appetite; and (11) plan for as few leftovers as possible, and use them quickly.

THE MODERN HOSPITAL

Vol. 81, December, 1953

* The value of meat in the therapeutic diet. A. E. Boller.—p. 114.
* The prune is a versatile fruit. I. L. Dolan.—p. 118.

Protein to Aid Recovery. Modern diet therapy gives protein the starring role it deserves. Far from yesterday's broth-and-milk regimen, protein-rich foods are used to supply at least an "adequate" amount of protein under stress, and in many cases protein is increased to aid in treating the condition which caused hospitalization. The full diet is resumed as soon as appetite and physical condition permit. Three reasons for the emphasis on protein are the value of the protein itself, the other nutrients which high-protein foods supply, and appetite appeal. Proteins vary greatly in quality according to the amino acids derived from them, and work with animals has shown that, for good utilization, the blood should contain all essential amino acids simultaneously. According to preliminary research, animal proteins are considered superior to most plant proteins, not only because of their amino acid content but also because the amino acids are liberated more rapidly.

Prunes. Prunes contain more riboflavin than any other fruit as well as appreciable amounts of some of the B vitamins and iron. They are also a superior source of provitamin A. The fructose of prunes is easily digested and is absorbed directly in the blood stream to become an immediate food-energy source. Terms designating sizes of prunes can be confusing; while they are often called "small," "medium," "large," and "extra large," terms such as 40/50 and 50/60 are also used. These figures indicate the number of prunes in a pound. Quick cooking is recommended for prunes. New processing methods have eliminated the need for soaking. If the cooked fruit is allowed to stand in its liquid for several hours, the prunes "plump up" and the liquid is tastier. In addition to their other virtues, prunes are economical; 1 lb. prunes, when cooked, provides 2 lb. 2 oz. cooked weight. Many ways to serve prunes are suggested.

PERSONNEL JOURNAL

Vol. 32, December, 1953

* Should employees rate their supervisors? A. R. Laney, Jr.—p. 255.

Should Employees "Rate" Supervisors? The supervisory force of an eastern company voted down the proposal that an annual "audit" be made of them by subordinates. Some comments "pro" and "con" are listed. These reasons, however, were not fully satis-

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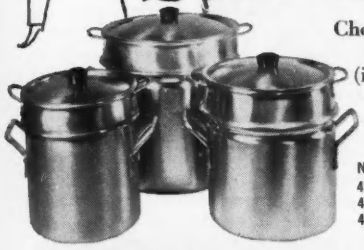

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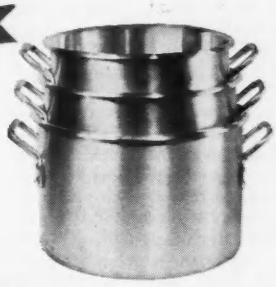
4358	8¾ qt.	$14.20	$11.95
4369	11 qt.	18.00	15.95
4370	17½ qt.	23.00	19.95

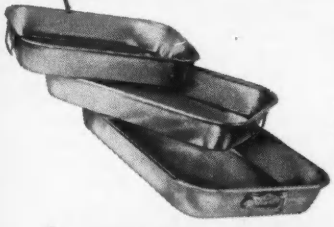
SAUCE POTS



A choice of three sizes—14, 20, and 26 qt. capacity.

NO.	SIZE	REG. EAST	SPEC.*
4332	14 qt.	$10.95	$ 9.85
4333	20 qt.	12.60	11.35
4334	26 qt.	14.25	12.95

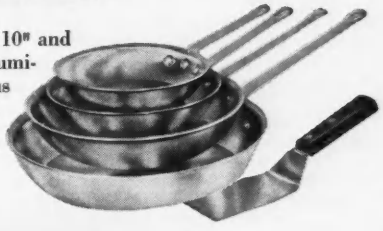
BAKE PANS



Choice of three pieces. A size for every need.

NO.	SIZE	REG. EAST	SPEC.*
4412	9 1/16 x 13 1/16 x 2 3/16	$2.85	$2.65
4414	10 5/8 x 15 3/16 x 2¼	4.20	3.85
4415	12 x 17 3/16 x 2¼	4.40	3.95

FRY PAN SET

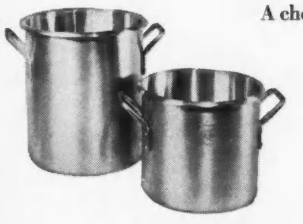


Consists of 7", 8", 10" and 12" Wear-Ever Aluminum fry pans, plus hamburger turner.

REGULAR PRICE—$18.80

SPECIAL* $16.30

STOCK POTS



A choice of two sizes—2¼ and 4 gals. capacity.

NO.	SIZE	REG. EAST	SPEC.*
4302	9 qt.	$ 6.85	$6.25
4304	16 qt.	10.70	9.85

COLANDERS

A choice of two sizes—11 and 16 qt. capacity. Perforated with 3/16" holes.

NO.	SIZE	REG. EAST	SPEC.*
4611	11 qt.	$ 9.25	$8.35
4616	16 qt.	10.95	9.85

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factory to the person who made the suggestion. Supervisory "blind spots" are a serious detriment to productivity and employee morale. If supervisors object to being "rated," how then can they determine the effect of their supervision on subordinates and discover what is really on employees' minds?

PRACTICAL HOME ECONOMICS

Vol. 23, December, 1953

* The economy of packaged mixes.—p. 25.

Packaged Mixes. Growing sales of packaged mixes reflect the homemaker's enthusiasm for prepared, partially cooked, and ready-to-serve foods. The U.S.D.A.'s test of time and money savings from such foods is described, and results are graphed. The foods class is an excellent place to introduce students to the new time-saving products—and with shorter class periods becoming the rule, it is also convenient to use them—but it is important that students learn to evaluate the relative economies of such products. While foods students should learn standard food preparation techniques, less emphasis on isolated skills results as each phase of home economics becomes related to family living. The value of savings in time, energy, and money is one which must be solved on an individual family basis. With more and better time-saving products on the market, and busy lives ahead of them, students should be made aware of the many factors in the real economy of planning and preparing family meals.

RESTAURANT MANAGEMENT

Vol. 73, November, 1953

* More meat for your money. Hindquarter of beef—Part II. P. F. Muellet.—p. 48.
* Roasting turkey with minimum meat loss. S. James.—p. 58.

Vol. 73, December, 1953

* Waitress uniforms that provide good style, fit, color, and durability. R. E. Murray.—p. 42.

Hindquarter of Beef. This article, sixth in a series on a new meat-cutting method for larger yield, continues the discussion of hindquarter of beef. A chart shows how to cut the carcass, and photographs illustrate various methods of preparation. Points discussed include: meat storage and quick-freezing of beef; meat inspection and selection; U. S. grading standards; and general information. A breakdown of weights, costs, and portions is recorded on a chart, while another table presents a comparison of weights and yields from hindquarter of beef.

Low-Temperature Turkey Roasting. High roasting temperatures may cost one-third of the cooked yield of turkey, according to recent tests. In addition to permitting larger portions, low-temperature roasting preserves quality. Some authorities feel the best oven temperature for turkey is 250° to 300°F., with 300° the most desirable for quantity cookery. Others recommend 250°F. for medium and large birds. Between 5 and 6 hr. are needed to roast a 20-lb., unstuffed turkey in this way. If time will not allow low-temperature roasting, poaching-simmering cooking of pre-cut turkeys is recommended. This latter method is described.

Waitresses' Uniforms. A waitress' uniform should be durable, color-fast, easily laundered, easy to don and doff, and trimly fitted. The style should identify her as a waitress rather than attempt to imitate the severity of nurses' or other uniformed women's garb. Pockets should be large and sturdy, and aprons are suggested as an inexpensive feminine touch. Color is important; certain yellows impair customers' appetites, while powerful hues add a jarring note. Pastels are suggested by a designer of uniforms, some of whose styles are photographed. His ideas on laundering are also given. If cotton is to be used, it should be pre-shrunk. However, the durability of "miracle" fibers outweighs their higher cost, and they clean readily and dry rapidly. It is desirable for each waitress to have two uniforms, but in no case should uniforms be shared.

WHAT'S NEW IN HOME ECONOMICS

Vol. 17, November, 1953

* Fresh fruit for winter use.—p. 44.
* Protein—a vital nutrient. A. E. Boller.—p. 48.
* What children eat and why. F. Ilg.—p. 72.

Winter Fruits. Selection and use of fresh fruits available during the winter are discussed. The fruits, some of which are not obtainable during all of the winter or throughout the whole nation, are: apples, avocados, bananas, citrus fruits, pears, pineapple, dates, grapes, and honeydew melon. General rules for purchasing are summarized. A chart gives the characteristics of some varieties of apples.

Protein. Proteins are complex molecules which the body cannot use until digestion breaks them down into amino acids. Some of these acids are indispensable, some are nonessential, and two can be manufactured by the body under certain circumstances. Some amino acids appear to be precursors of others or of vitamins in the body. However, the specific functions of the individual acids, other than building body tissue, are as yet unknown. The optimal mixture of amino acids is also unknown. High-quality protein, long recognized as essential to growth and maintenance of health, has been found important in the prevention and cure of many abnormal conditions. Ordinary cooking heat does not significantly alter the nutritive quality of protein, and in some cases improves it.

What Children Eat and Why. A child's diet should be regulated to his individual need which varies with his own preferences, temperament, and rate of development. Each age group presents its own particular problems. A definite routine and individual attention are required for all. Sociability with others during meals cannot be expected until the child is nearly six years old. By age fifteen the child's attitude toward food becomes more adult.

Cook Books in Russia

The Associated Press reports that consumer demand has caused the issuance of a cook book in Russia. It seems that so few cook books were extant—many prerevolutionary—that they have become a precious inheritance to be handed down from mother to daughter. The lack of paper to print both cook books and copies of Stalin's writings has resulted, until last year, in a printing vacuum as far as the housewife was concerned.

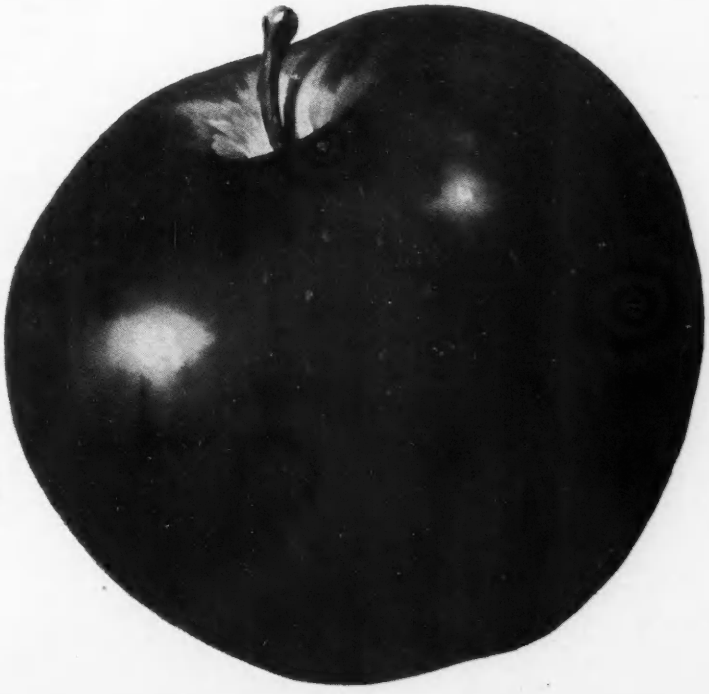
Recently, however, the first edition of a cook book which included not only recipes but eating etiquette was issued. The first printing of 500,000 copies was sold out almost immediately. Long queues formed outside bookstores, and salesgirls hid copies for their favored customers. One housewife from a southern industrial city with a population of several hundred thousand wrote to a Moscow paper complaining that there was only one copy of the book in her entire city.

Because of the demand, a second and more complete edition of another half million copies is now being published. In addition, the publishing industry is issuing a series of pamphlets on food preparation—an innovation in Russia. However, the million copies of the cook book are just a drop in the bucket, since there are 50 million families in Russia.

For weight control

a tasty appetite-appeaser

A fresh apple is a natural and delicious appetite-appeaser. For between-meal snacks or dessert, a bright, fresh apple provides just enough quickly assimilable carbohydrate to quench an over-active appetite. At any time, its normalizing bulk aids digestion and elimination . . . helps relieve that empty feeling of low calorie diets. A fresh apple is not only a toothsome morsel, but its crisp, firm texture helps restore gingival tone often impaired by highly refined food. Won't you consider nature's best tasting appetite-appeaser as a regular part of your patients' weight control regimen?



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OF AMERICA

FOURTH ANNUAL A. D. A. PHOTOGRAPHIC CONTEST

The American Dietetic Association announces a contest for photographs showing on-the-job activities of dietitians and nutritionists. Anyone may enter. The contest opens February 15 and closes May 15, 1954.

Prizes will be cash awards

First	**$75**
Second	**35**
Third	**15**
15 prizes	**5 each**

Rules:

1. The contest is open to the general public. CONTEST OPENS FEBRUARY 15 AND CLOSES MAY 15, 1954. No entry fee is required.
2. Any number of black and white glossy prints may be submitted by an entrant. Prints must be 8 x 10. No acknowledgement or receipt of entries will be sent, unless entrants enclose an addressed postal card to be signed and returned.
3. Subject matter is restricted to the life and activities of dietitians and nutritionists. The central figure should be a dietitian or nutritionist in a job or training situation. A close-up, action picture is preferable. The setting may be outdoor or indoor. When a white uniform is worn (it should be worn if the job situation requires one), all of the details concerning the uniform and other articles of apparel should be correct—i.e., uniforms, long-sleeved and well-pressed; hair neatly dressed; no caps (dietitians in the armed services and Veterans Administration hospitals may be photographed with caps); no handkerchiefs in pockets; no conspicuous jewelry as earrings or large rings; conservative white shoes (no wedgies, no high heels, no ankle straps). IF POSSIBLE, CONSULT A MEMBER OF THE AMERICAN DIETETIC ASSOCIATION ON CORRECTNESS OF DETAILS SUCH AS DRESS, EQUIPMENT, AND SURROUNDINGS SHOWN IN THE PICTURE.
4. Prints may be mounted or unmounted.
5. Pictures which have been copyrighted or are under consideration for copyright by other organizations or publications are NOT ELIGIBLE as contest entries.
6. Each print must be accompanied by a filled-in entry blank as provided here, or facsimile thereof. Please print or typewrite the information requested on the blank. Additional entry blanks are obtainable by writing the Contest Editor of The American Dietetic Association.
7. No entries will be returned until after announcement of the winners. Pictures which do not win prizes will then be returned, provided a self-addressed and stamped envelope, or addressed label and postage are contained in the same package in which each lot of entries is sent. Do not send postage separately for return. The Contest Editor cannot enter into correspondence of any kind regarding the entries.
8. Prize-winning prints, including all reproduction and promotional rights, BECOME THE EXCLUSIVE PROPERTY OF THE AMERICAN DIETETIC ASSOCIATION. All entrants whose photographs are under consideration for prizes will be required to FURNISH ORIGINAL NEGATIVES BEFORE PRIZES ARE AWARDED. All prize-winning negatives become the exclusive property of The American Dietetic Association. Written releases from all persons photographed must accompany the negatives. (Sample releases may be obtained by writing to the Contest Editor.)
9. Judging will be based on the subject matter, the authenticity and accuracy of detail, and the artistic value and perfection of the photograph. The following persons will serve as judges:
   Nowell Ward, Associate, Royal Photographers Society, London, and winner of photographic awards in the U. S. and Europe
   Warren Wetherell, Advertising Consultant and Designer
   Grace Bulman, President, The American Dietetic Association
   Decisions of the judges will be final.
10. Address all entries to Contest Editor, The American Dietetic Association, 620 North Michigan Avenue, Chicago 11, Illinois. Final entries must be postmarked not later than midnight of May 15, 1954.
11. Prize winners will be announced in the July 1954 issue of the *Journal of The American Dietetic Association*.
12. While exercising the utmost care in handling entries, The American Dietetic Association assumes no responsibility for loss or damage of contest entries.

USE THIS ENTRY BLANK (PLEASE PRINT)

Contest Editor, The American Dietetic Association
620 North Michigan Avenue, Chicago 11, Illinois

Please enter the enclosed picture in The American Dietetic Association Photographic Contest for 1954.

NAME_____

Address_____

City_____ Zone_____ State_____

Description of Picture_____

Where made (hospital or organization)_____

USE THIS ENTRY BLANK

Each one of your entries must be accompanied by a filled-in entry blank provided here, or a facsimile of it. Additional blanks may be obtained from the Contest Editor of The American Dietetic Association.

HOW LILY CUPS CURED A HOSPITAL HEADACHE!

The Morris Memorial Hospital, of Milton, West Virginia, found food service a difficult, costly problem. Administrator George I. Mattix tells what they did about it.

The Morris Memorial Hospital
For Crippled Children
Milton, West Virginia

January 15, 1953

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George I. Mattix
Administrator

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If you have a feeding problem, Lily* Paper Service may be the solution. We should like to offer you suggestions.
Why not write us?

News Notes

Goldberger Award Recipient. Dr. James S. McLester of Birmingham, Alabama received the Joseph Goldberger award for 1953 at the American Medical Association's Board of Trustees meeting in St. Louis in November. The award, presented annually for outstanding contributions in the field of clinical nutrition, is made possible through grants by The Nutrition Foundation, Inc., and consists of a gold medal and $1000. Dr. McLester, fourth recipient of the award, was cited for the role he has played in translating the results of nutrition research into human values and in the integration of nutrition into the teaching of all phases of medicine. He is now associated with his son, Dr. James B. McLester, in the McLester Clinic in Birmingham and is Professor Emeritus of Medicine at the Medical College of Alabama. Dr. McLester, author of *Nutrition and Diet in Health and Disease*, was President of the American Medical Association in 1935 and has been Chairman of its Council on Foods and Nutrition.

Plentiful Foods. The U.S.D.A. lists the following foods which are expected to be in plentiful supply during February:

Fruits and vegetables

Beans—large dry Limas	Lettuce
Beans, pinto	Onions
Cabbage	Oranges, fresh and processed
Cranberry sauce	Pears, winter
Grapefruit, fresh and processed	Potatoes
	Raisins

Protein foods

Beef	Dairy products
Chickens—broilers and fryers	Eggs

Other foods

Food fats and oils (including lard)
Peanuts and peanut butter

"Special features" of the month are broilers and fryers, winter pears, and potatoes.

FAO News. Recipes to popularize soybeans are being distributed in Ceylon by the Food and Agriculture Organization, prior to introduction of the crop which at present the natives do not eat or grow. FAO has established a test kitchen to investigate the best ways in which the bean can be incorporated into local dishes. Recipes for dishes found acceptable are being spread by government extension agencies and home science teachers, and as soon as a series of acceptable dishes are available, soya growing will begin. Horticultural aspects have been worked out, and the proper varieties have been selected. Most of the beans will probably be used blended with wheat flour, in the form of bread and some local carbohydrate foods and in the popular curries.

Libya, Iran, and Yemen are the three newest members of FAO, having joined during the Seventh Session of the FAO Conference in Rome last fall. The total membership of FAO is now seventy-one nations.

New Business Magazine. In November, Volume 1, Number 1 of *Institutional Feeding and Housing* was published by Conover-Mast Publications, Inc., New York City. Planned to cover the problems of quantity feeding and housing, the first issue contains articles on such subjects as training waiters, saving money in food buying, methods of carving turkey, planning work flow, and use and care of equipment. Because of its applicability to the work of administrative dietitians, it will be abstracted in the Current Literature Section of the JOURNAL in coming months.

Government Publication. *Television for You, A Handbook for Extension Agents*, has been released as Agriculture Handbook No. 55 of the U.S.D.A. Prepared by Joseph D. Tonkin, Extension Service, and Alice F. Skelsey, Office of Information. This twenty-four-page booklet contains general information about planning and arranging for programs, types of programs, visual aids, guests, rehearsals, "rundown scripts," and cueing. Sample rundown sheets for home demonstration and county agents' television features are shown, and a glossary of terms is included, as well as cartoon illustrations of hand cues. Some of the methods included were developed in the U.S.D.A. Television Project under the Research and Marketing Act. *Television for You* is obtainable from the Government Printing Office, Washington 25, D. C., for 15 cents a copy.

Health Career Kit. "Your Career in Health" is the title of a kit prepared by the Washington State Health Council's Committee on Recruiting, as the first step in a campaign to interest young people in some of the lesser-known opportunities. The kit contains fact sheets on twenty-six professions, giving the training requirements, Washington State schools which offer courses, typical working conditions, and salaries. Dietetics is represented in the kit by the pamphlet "Chart Your Course toward Dietetics," copies of which were furnished by the Washington State Dietetic Association. About six hundred kits will be distributed free to schools and colleges throughout the state. Principals, vocational advisors, health teachers, and others will be notified by letter of their availability. The kits will be available to others for $2.50.

TV Film on Restaurant Eating. "No Dishes Tonight" is the title of a 4-min., noncommercial television film, produced by the Tea Council in cooperation with the National Restaurant Association. The film, which has been shown over more than seventy TV stations in the U. S., concerns the problems of the average American family dining out. The action follows a family group through their meal, solving such problems as a proper tip, who should order, French words on the menu, and how to see that an error in the check is corrected. "No Dishes Tonight" is available free of charge to managers of TV stations from the Tea Council, 500 Fifth Avenue, New York City.

Institutes in Dietary Administration. The American Hospital Association is planning two Institutes in Dietary Administration during 1954. The first is scheduled to be held at the Shamrock Hotel in Houston, March 1 to 5, and the second in Chicago, November 8 to 12. To date, the American Hospital Association has conducted fourteen institutes in dietetics at which approximately 1500 students have been enrolled.

Minnesota Continuation Course. The University of Minnesota again will offer a continuation course in clinical dietetics at the Center for Continuation Study, March 4 to 6. Important advances in dietetics, including the relationship of diet to vascular disease, will be stressed. The course will be directed by Gertrude I. Thomas, Director of Nutrition and Professor in Dietetics, University of Minnesota Hospitals, Minneapolis.

Foods and Nutrition Institute. The School of Home Economics, University of Wisconsin, will present an Institute in Foods and Nutrition, March 25 through 27, for dietitians, nutritionists, teachers, extension personnel, and public health nurses. Recent findings in foods and nutrition will be discussed. A portion of the program will be devoted to a round table discussion on food quality from the standpoints of sanitation, acceptance, nutritive value, and chemical additives. Among those invited to participate in the programs are: Drs. C. A. Elvehjem, Carl Baumann, and Helen Parsons, University of Wisconsin; Dr. Gladys E. Vail, Purdue University; Dr. Genevieve Stearns, State University of Iowa; and Lenore Sullivan, Iowa State College. Further information concerning the Institute may be obtained from the Department of Foods and Nutrition, School of Home Economics, University of Wisconsin, Madison.

Southeastern Conference of Dietitians. Atlanta will be the scene of the meeting of the Southeastern Conference of Dietitians on April 7. The program will include the following:

"Diabetes in the Public Health Program"—panel discussion with a doctor, a nursing representative, and two nutrition specialists from the Georgia Department of Public Health

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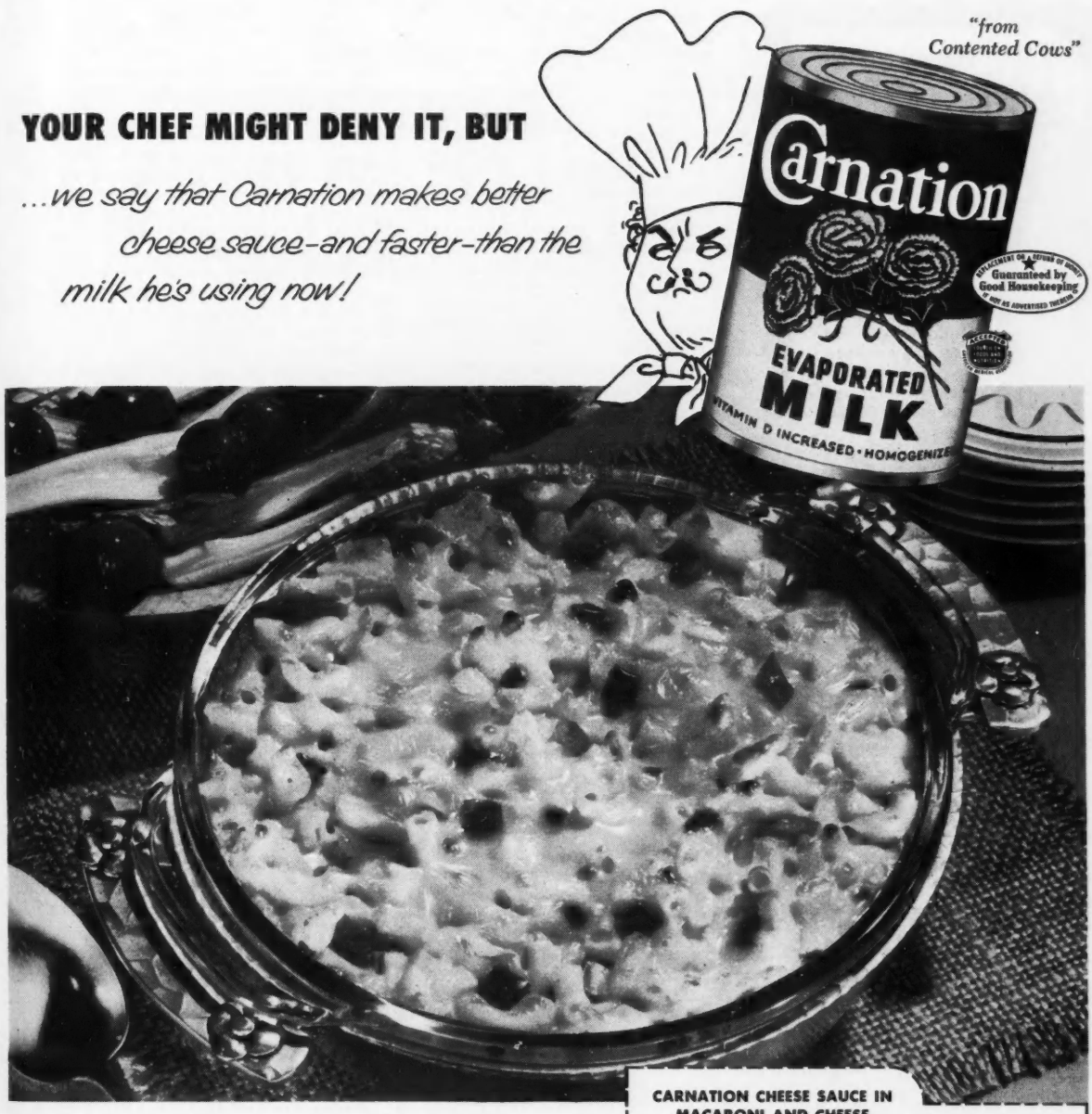

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CARNATION CHEESE SAUCE IN MACARONI AND CHEESE

(Makes 4-6 servings)

- 1⅔ cups (large can) undiluted CARNATION EVAPORATED MILK
- ½ teaspoon salt
- 2 cups (about 8 oz.) grated or cubed process-type American cheese
- 1 teaspoon dry mustard
- 1 tablespoon steak sauce
- 4 cups cooked macaroni
- ¼ cup chopped pimiento
- ¼ cup chopped green pepper

To make cheese sauce, simmer Carnation and salt together in saucepan over low heat to just below boiling point. Add cheese; stir in mustard and steak sauce. *Then* pour over macaroni, pimiento and green pepper in buttered 2-quart casserole. Bake in moderate oven (350°F.) 25-30 minutes.

WRITE to Mary Blake for new set of quantity recipes. 24 recipes in all, developed for 25 and 50 servings. Address Mary Blake, Dept. C-24, Carnation Company, Los Angeles 36, California.

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"Hospital Administration and the Dietary Department"—Dr. R. C. Williams, Georgia Department of Public Health, Atlanta
"Stabilization of Employees through Training"
"Dietetics as a Profession"—Grace Bulman, President, A.D.A. (attending as A.D.A. representative)
"Cost Accounting Procedure"—panel discussion with an accounting consultant of the Georgia Department of Public Health; a dietitian from a large hospital; and a dietitian from a small hospital
"Practical Suggestions for Purchasing Meats"—Virginia Moore, Southern Division, Armour and Company
"Standardized Recipes and Portion Control"—Isola Robinson, Dietetics Specialist, American Hospital Association, Chicago

Work Conference in Nutrition. A work conference in nutrition featuring recent and applicable research in nutrition will be held at the University of California in Berkeley, July 12 through 23, immediately following the American Home Economics Association convention in San Francisco. Dr. Agnes Fay Morgan will direct the conference. A workshop in family life education, directed by Dr. Judson T. Landis, will be held concurrently. Attendance at both conferences will be permitted without academic credit. For academic credit, participation must be restricted to a single conference. Further information may be obtained from University Extension, University of California, Berkeley.

Meeting. The 11th Annual Meeting of the American Geriatrics Society will be held at the Hotel Fairmont in San Francisco, June 17 to 19, preceding the meeting of the American Medical Association. The program will cover many aspects of geriatric medicine and will include several panel discussions on such subjects as recent developments in cardiology and methods of determining operability in older patients.

J. Aileen Merwin. On December 12, J. Aileen Merwin died in Boston. She had been engaged in nutrition research at Arthur D. Little Company, Inc., Cambridge, for the past two years. She held both a bachelor's and master's degree from Mather College, Western Reserve University, Cleveland. She had formerly been on the staffs of University Hospitals, Cleveland; the Frances Payne Bolton School of Nursing of Western Reserve University; Michael Reese Hospital, Chicago; and Florida State University, Tallahassee. Largely through her leadership, The American Dietetic Association's *A Manual for Teaching Dietetics to Student Nurses* was compiled and published in 1949.

Helen J. Phaneuf. The Association office has been notified of the death of Helen Johnson Phaneuf, Meriden, Connecticut, on December 22. Mrs. Phaneuf had been Chief Nutritionist, Connecticut Department of Health, Hartford, for many years, and had also been President of the Connecticut Dietetic and Home Economics Associations. She was a graduate of the University of Connecticut and held a master's degree from Western Reserve University, Cleveland.

Cherry Juice Concentrate. Frozen concentrated juice may be the cherry crop's new outlet. At the Oregon Agricultural Experiment Station, fresh cherries were mashed in a hammermill, sugar was added, and the combination was cooked about 20 min. An enzyme added to the juice separated and settled the fruit cells, then the clear juice was obtained by filtering. No single variety of cherry yielded an acceptable juice; sour cherries were too high in acid and too low in sugar, and sweet cherries were too low in acid. However, when Royal Anne and Bing sweet cherries were used, together with a little concentrated cranberry juice, the result was a delightful beverage with good freezing possibilities.

Macoun Apple. The Macoun apple, introduced thirty years ago by the New York State Agricultural Experiment Station, Geneva, is now coming into popularity with consumers and growers. The Station reports that the demand for the Macoun as a dessert apple at local markets and roadside stands has been increasing lately. Also, although it is not considered a processing apple, reports are favorable about the texture and flavor of applesauce made from it. The Macoun resulted from a cross between McIntosh and Jersey Black. It is darker than the McIntosh and has a thin skin and white, crisp, tender, flavorful flesh. The skin makes the apple pleasant for out-of-hand eating, but care must be taken that it is not punctured by fingernails in handling or by the stems of other apples.

Old and New Foods. The New Mexico Agricultural Experiment Station has recently analyzed not only the important traditional foods of the Spanish-speaking people but some newer, easier to prepare foods which are replacing the old ones in many households. The Station explains that the early settlers depended on the limited foods which could be raised there and thus evolved a special dietary based on Indian foods. Living in isolated villages, their descendants still prefer the old foods, and many newcomers have learned to like them; but the younger, less isolated families are using more of the ready-prepared foods.

Corn is important in the traditional diet. The Station found that "blue" ("native") corn is much higher in niacin and slightly higher in thiamine than ordinary commercial white corn. The old method of loosening corn hulls for corn to be used in *tortillas* and tamales was with lime, which provided calcium in a diet that included little milk or other dairy foods. Corn *tortillas*, the study showed, were richer in calcium, thiamine, riboflavin, and niacin than the patent wheat flour *tortillas* now replacing them. Some of the wild greens equal cultivated greens in food value, and their use should

Popular S&W Cafeterias PUT IT ON THE LINE

VOLLRATH stainless steel WARE for food service

IN keeping with their fine reputation for attractive dining facilities and delicious foods, the S&W management has selected Vollrath stainless steel Ware for the food service line in this beautiful new cafeteria . . . the latest and the largest in the famous S&W chain, located in Greensboro, N. C.

Like so many other leading cafeterias, restaurants and hospitals the world over, S&W knows the Vollrath line is a sound investment for presenting food at its tasty, colorful best, and maintaining quality appearance, economical serviceability and minimum replacement costs. And for durability and ease of cleaning it's second to none.

Whether you're planning a new installation or simply replacing outmoded equipment — look to Vollrath for a complete line of food service and kitchen utensils. Available in heavy-gauge stainless steel and in genuine porcelain ware at leading jobbers everywhere.

Sales Offices and Display Rooms:
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SINCE 1874
The Vollrath Co.
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THE VOLLRATH COMPANY
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Exclusive manufacturers of Vollrath Ware for 80 years — since 1874.

ELIMINATE GARBAGE ELECTRICALLY

At the "Point of Origin"

WASTE KING®

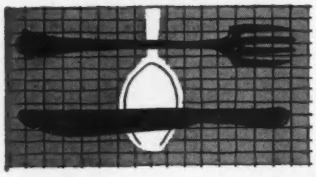
Commercial *Pulverator*

Restaurants, Hotels, Hospitals, Schools, Industry, Institutions and all Food Service Establishments

SAVE UP TO 40% NET PROFIT

SAVE COST OF GARBAGE CANS — No more scrubbing cans or placing out for pickup. No garbage litter cleanups. Save manpower cost.

SAVE VALUABLE SPACE — Compact WASTE KING easily installed in existing space. More work area. Use extra space for storage.



SAVE COST OF SILVERWARE—Exclusive WASTE KING "Silver-Gard" saves silverware formerly lost in garbage cans. Save up to $750 a year on this item alone.

WASTE KING REDUCES COSTS— INCREASES PROFITS

Eliminates all garbage, even paper napkins. No sorting necessary.

Continuous feed. Faster operation.

Lifetime Grind Control. Longer Life. No clogging. No after odor.

Heavy duty. Standard installation, wiring and plumbing. No heavy foundation.

Lowest service factor, less than 1%.

Back flow protection according to local codes.

Model R-453 WASTE KING Commercial *Pulverator* Complete Assembly

Waste King COMMERCIAL *PULVERATOR.*

With Lifetime Grind Control

SEE YOUR RESTAURANT EQUIPMENT DEALER

be encouraged where home gardens are scarce. Chili, the Spanish pepper, is important because of its ascorbic acid, niacin, and carotene. Most of the ascorbic acid is lost when the chili is sun-dried in the traditional way, but the other vitamins remain.

What Influences Farm Family Diets? "He won't eat them" is the frequent reason given by homemakers for not serving "new" foods or preparing old ones in new ways, according to a study of some 365 farm families by the Vermont Agricultural Experiment Station. Food habits acquired in childhood by those who now head households seem to be the greatest influence over farm family diets. Education, according to the study, is also affecting food habits. "Best meals" were more common among women who had home economics training, had been 4-H Club members, or belonged to home demonstration clubs. Women also spoke of learning from their daughters who were home economics students or from their sons who had returned from military service with changed food habits.

In some families' diets, home-raised and -stored green and yellow vegetables and tomatoes were important. Those with the "best" meals raised much more of their food than those who had the poorest. However, a closer relation existed between storage of food for winter use and rating of meals than between home production and meal rating.

Honey in Baked Products. At the Kansas Agricultural Experiment Station, research has shown that honey can improve the color, flavor, and texture of most bakery products, as well as increase their ability to hold moisture and to stay fresh longer. Fruit cakes made with honey, for example, have richer flavor and superior slicing quality. The desirable amounts of honey range from about 5 per cent of the total sugar content of bread and cookies to 40 per cent or more of the sugar in cakes.

It is long believed that normal variations in the chemical properties of honey would severely limit its use in baking. However, it was found that only the flavor and color of honey have much effect on the uniformity of bakery products made with it. If the honey is properly selected, according to specifications developed by the Kansas Station, its general use should give good results.

By developing wider use for honey, agriculture generally may be benefited. The value of the honeybee in pollination of many fruit and seed crops is well recognized, and if a larger market for honey can be promoted, beekeepers will be encouraged to stay in business.

News of State Associations

Colorado Dietetic Association. Colorado dietitians have been receiving instruction in emergency mass feeding, in a course offered by the Colorado civil defense organization. The course covers food storage, contamination, and poison-

Chef Noël Bozzone of Chicago's Famous Wrigley Building Restaurant

4 SOUPS THAT WILL MAKE YOU FAMOUS, TOO!

READY *INSTANTLY*...ABOUT 3½¢ A SERVING!

TOMATO—Truly distinctive and unmatched in quality with all the flavor of freshly-picked, vine-ripened tomatoes. So rich you dilute it 5 to 1. It's versatile . . . use it for making sea food sauces, tomato aspic, chili, and other tomato flavored dishes. Le Gout Concentrated Soups stay smooth . . . never curdle when combined with water or milk.

MUSHROOM—Different . . . Better . . . It's made with freshly-picked, cultivated mushrooms. Dilute 3 to 1 for delicious, full-flavored soup. Makes superb mushroom sauces for steaks, chops, meat loaves and fish. Le Gout Concentrated Soups are economical, occupy less storage space, give you more work area!

CELERY—Made with garden-fresh celery. Delicious and full-bodied with that country-kitchen flavor. You can also use Le Gout Concentrated Celery Soup to make flavorful celery sauce. Le Gout Concentrated Soups save hours of preparation and solve the problem of daily variety.

ASPARAGUS—A wonderfully different soup made with freshly-cut, tender, green asparagus. Can be used for bisques, casseroles, gelatin salads, and in many other foods. Le Gout Concentrated Soups have controlled flavor, texture and color. Now you can control your production, cut waste.

Use Le Gout Concentrated Soups for regular or creamed soups, sauces, in salads and dressings. Cut your labor and ingredient costs!

LE GOUT®
FEARN FOODS

Fearn Foods Inc. FRANKLIN PARK, ILLINOIS

ing; water purification and sanitation; and preparation and inspection of improvised cooking equipment. It is the Colorado Association's aim that all members receive the training.

Officers of the Colorado Dietetic Association are: President, Louise Crandall Poley, Denver General Hospital; President-Elect, Marguerite L. Pettee, University of Colorado Medical School, Denver; Treasurer, Dorothy Sleight Miller, Corwin Hospital, Pueblo; and Secretary, Dorothy Dickson Hutchinson, St. Luke's Hospital, Denver.

Kansas Dietetic Association. The *Greater Kansas City Dietetic Association* announces the following officers for 1953-54: President, Esther Washington Williams, Menorah Hospital, Kansas City, Missouri; Vice President, Bess Woodrum, VA Hospital, Kansas City, Missouri; and Secretary, Mary Margaret Boone, University of Kansas Medical Center, Kansas City, Kansas.

Louisiana Dietetic Association. Shreveport was host to the Louisiana Dietetic Association for its two-day fall meeting in October. Pauline Beery Mack, Texas State College for Women, spoke on "Studies in Human Nutrition," and Dr. Lewis G. Mills, Baylor University, discussed "The Methods of Testing the Functions of the Adrenal Gland." Frances Sanders, VA Hospital, Alexandria, reported on a three-day regional civil defense meeting held at Camp Polk in September. At the luncheon meeting, Nell Morris, Director, Frito Consumer Service, Dallas, spoke on the relations between the dietitian and the exhibitor at conventions. The meeting concluded with tours of the VA Hospital and the new Confederate Memorial Hospital.

Massachusetts Dietetic Association. The 1953-54 "kick-off" meeting of the Massachusetts Dietetic Association was a reception for the fifty dietetic interns in Boston, followed by a report on the A.D.A. Annual Meeting. The second fall meeting was held in Northampton, with Andrew Vitali, Director of Food Service, Mt. Holyoke College, as the principal speaker. "The Future of Dietetics in the Hospital and the Community" was presented at another meeting by Dr. Dean A. Clark, Massachusetts General Hospital. A "buzz group" discussion period at which the speaker's topic was scrutinized followed. Questions which developed in the groups were then put to the speaker. Christmas was celebrated by the purchase of UNESCO stamps to support the Institute of Nutrition in the Philippines. In January, the members met at the new 100-bed VA Hospital in Boston and after a tour of the dietary department, heard Dr. Howard White, VA Area Chief Clinical Psychologist, Boston, discuss "Problems: Personal or Personnel."

Nebraska Dietetic Association. The Nebraska Dietetic Association convention was held in Lincoln in November, in conjunction with the convention of the Nebraska Hospital Association. Anna Boller Beach, National Live Stock and Meat Board, Chicago, spoke on "Meat Comes into Its Own Nutritionally." Doris T. Odle, A.D.A. Treasurer, attended the meeting as A.D.A. representative.

This year's officers of the Nebraska Association are: President, Betty Jean Yapp, Lincoln General Hospital, Lincoln; President-Elect, Dorothea Edwards, VA Hospital, Omaha; Treasurer, Doris Spragg, University Hospital, Omaha; and Secretary, Madeline Bischof, University Hospital, Omaha.

North Carolina Dietetic Association. Tar heel dietitians held their annual fall meeting in Montreat in October. A tour of the Western North Carolina Sanatorium kitchen was included in the program. Corinne Robinson, Temple University School of Medicine, Philadelphia, was A.D.A. national representative. The program included the following speeches:

"Nutrition and Dietetics in Puerto Rico" Frances MacKinnon, University of North Carolina, Chapel Hill

"Diet Therapy—The Use of Diets as the Principal Therapeutic Measure"—Dr. Robert G. Fish, VA Hospital, Swannanoa Division, Oteen

"Wills and Trusts for Women"—Robert Clodfelter, First National Bank, Asheville

"Employee Relations"—panel discussion "Personnel Development"—W. A. Edgerton, American Enka Corporation

What about this

"New Non-Fattening Sweetener"

FACTS YOU SHOULD KNOW ABOUT SUCARYL®

PARDON us if we're two jumps behind you. Maybe you have the facts. *But* . . . right now a lot of people are asking a lot of questions about SUCARYL (Cyclamate, Abbott). They've read about it, heard about it. Here, briefly, is the story—

SUCARYL gives sweetness without calories.

With all its full, clean sweetness, SUCARYL has no nutritive content. Dieters can have all the sweetness they want with SUCARYL—and never add a calorie.

SUCARYL has no bitter aftertaste.

To many veteran dieters, this is point number one. They've tried synthetic sweeteners, found them slightly bitter, sharp. SUCARYL tastes just like sugar. In ordinary use, it will never have an "off" taste.

SUCARYL is safe.

Absolutely. It has passed every test. For people on salt-restricted diets, SUCARYL is provided also in calcium form.

SUCARYL holds its sweetness in cooking.

See for yourself—by trying any of the kitchen-tested dishes in the new SUCARYL recipe booklet.* SUCARYL *keeps its natural sweetness in cooking, baking, boiling, canning.* Literally a whole new world of foods is now open to sugar-restricted dieters and diabetics.

We hope you'll make this a "check list" when you try—and compare—SUCARYL. Abbott

*At pharmacies; or write Abbott Laboratories, North Chicago, Illinois. 1-44-54

ALL IN A DAYS WORK ★ ★ ★ ★ ★ **by DAN D. DOWNYFLAKE**

I especially recommend our fried shrimps today.
OK I'll try them again on your say-so!
Say these taste better than I've ever had here before! . . . What have you done to them?
The Boss will be glad to hear that! Let me bring him over.
Mr. Jones, those were the best fried shrimps I ever tasted . . . here or anywhere! What's the secret?
It's simple, sir . . . we just switched to famous Downyflake BREADER MIX.

WHY THOUSANDS OF RESTAURATEURS HAVE SWITCHED TO Downyflake BREADER MIX

. . . *because* IT MADE MY FRIED FOODS • TASTE BETTER • LOOK BETTER • FRY BETTER • COST LESS

1. TASTES BETTER!

Downyflake Breader Mix contains appetite-pleasing spices and MONOSODIUM GLUTAMATE, the flavoring miracle that picks up and emphasizes delicate flavor, tenderness, of fried shrimps and other foods.

2. LOOKS BETTER!

Downyflake Breader Mix gives fried foods more pleasing appearance; distinctive, richer, color.

3. FRIES BETTER!

Downyflake Breader Mix is so easy to use! Absorbs less fat...adheres better...more uniformly.

4. COSTS LESS!

Downyflake Breader Mix, due to scientific blending of ingredients, saves you money on shortening because of low fat absorption. A little goes a long way.

Why don't you switch to Downyflake Breader Mix as thousands of other restaurateurs have done? You'll see the difference in a minute . . . and so will your customers!

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"The Administrator and Personnel Policy"—S. K. Hunt, President, North Carolina Hospital Association

"The Dietitian and Personnel Policy"—Delilah Siler, Cone Memorial Hospital, Greensboro

Officers for this year of the North Carolina Association are: President, Mary Anderson, North Carolina Memorial Hospital, Chapel Hill; President-Elect, Rebecca Rogers, Watts Hospital, Durham; Treasurer, Mabel Gladin Rogers, Raleigh; and Secretary, Carolyn Flewellen, North Carolina Board of Health, Raleigh.

Oklahoma Dietetic Association. Members of the Oklahoma Dietetic Association held their annual fall business meeting at Oklahoma College for Women, Chickasha, in November. A feature of the program was an informal evening recruiting program to which home economics students, Future Homemakers of America, and 4-H Club members were invited to hear speakers in various fields of dietetics.

The *Oklahoma Diet Manual* is now available. It is a loose-leaf, twenty-nine-page book compiled for small institutions and designed for use by personnel untrained in nutrition. Thus, to prevent unqualified prescription, diets are not labeled as to intended use. The manual includes: outlines and meal plans for an adequate normal diet, with modifications in texture, residue, protein, sodium, and calories; three programs of dietary management of gastric ulcers; supplementary feeding schedules for the young child; and an allergy detection regimen. Also contained are height-weight tables for children and adults; food composition lists, including the "Short Method for Dietary Analysis"; and the Recommended Dietary Allowances. The charge for the complete manual is $1.25. Blocks of 50 or 100 copies of any page are also available.

Officers for 1953–54 of the Oklahoma Dietetic Association are: President, Mary Alice Bolton Morris, Chickasha; President-Elect, Alma White, Oklahoma A. & M. College, Stillwater; Treasurer, Frankie Andrews Roberts, Oklahoma City Board of Education; and Secretary, Mabel Walker, Oklahoma A. &. M. College, Stillwater.

Pennsylvania Dietetic Association. Officers of the Pennsylvania Dietetic Association for 1953–54 are: President, Sister Maude Behrman, The Lankenau Hospital, Philadelphia; President-Elect, Melva B. Bakkie, Carnegie Institute of Technology, Pittsburgh; Treasurer, Mary Agnes Wesner, Allegheny General Hospital, Pittsburgh; and Secretary, Julia Amerise, Woman's Hospital, Philadelphia. Section chairmen for the year are: Community Nutrition, Mary Forman, Dairy Council, Inc., Philadelphia; Diet Therapy, Nancy Phillis, Shadyside Hospital, Pittsburgh: Food Administration, Agnes Kacerovsky, VA Hospital, Pittsburgh; and Professional Education, Aileen Holz Konhauser, The Pennsylvania State University, State College.

Washington State Dietetic Association. The Washington State Dietetic Association last fall became a member of the Washington State Health Council.

Members of the *Seattle Dietetic Association*, at their October meeting, were shown a sound film on "Self Detection of Breast Cancer." A physician answered questions following the presentation. In November, Kathleen Leahy, University of Washington School of Nursing, spoke on the World Health Organization, and in January, a physician addressed the group on "The Anemias."

The *Spokane Dietetic Association* met in November to hear Dr. Sol Levy, psychiatrist, talk about nutrition and diets in relation to psychiatric problems.

Association Activities

Representative. Henderika J. Rynbergen attended the meeting of the Board of Directors of the *National Health Council* on December 11 in New York. City in the absence of Grace Bulman.

Board and Committee Meetings. The *Executive Board*, *Coordinating Cabinet*, and *Finance Committee* of A.D.A. are meeting in Chicago the week of February 8.

Representatives of the *Dietetic In-*

Here's

More Coffee Flavor

There are many tastes to please in a hospital—nurses, patients, doctors, the administrative staff. In coffee *all* want FLAVOR. Millions enjoy Continental Coffee because it has the *most* in flavor—delicious, winey-rich, full-bodied and unvaryingly fine—kept so by special Automatic Roasting Controls that maintain exact uniformity.

These qualities of more flavor and uniformity, plus Continental's topnotch coffee service, all add up to *value*—value so highly regarded that nearly 21,000 hospitals, restaurants, hotels, other dining places prefer and serve Continental Coffee today!

For more coffee flavor in your hospital, for more coffee enjoyment and *better value*, see your Continental Man . . . now!

For best results regardless of brand—always brew your coffee 2½ gallons to the pound

In every walk of life everyone enjoys . . .

Continental Coffee

AMERICA'S LEADING COFFEE for RESTAURANTS, HOTELS and INSTITUTIONS
CONTINENTAL COFFEE COMPANY CHICAGO • BROOKLYN • TOLEDO
Importers Roasters • Members New York Coffee and Sugar Exchange

.....And here's a selection of "76" Menu Products of particular interest to Hospital Dietitians

TEAS
SOUP MIXES
W-B Chicken Soup Mix
W-B Noodle Soup Mix
W-B Beef Soup Stock
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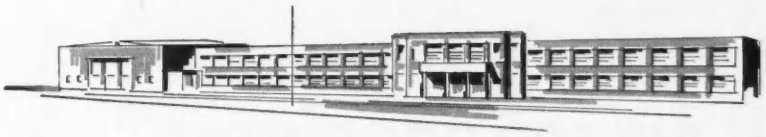
PURE EGG NOODLES
MACARONI–SPAGHETTI
PANCAKE MIX
WAFFLE—PANCAKE SYRUP
HOT CHOCOLATE
CHOCOLATE SYRUP
HOT FUDGE
SPICES
CHILI CON CARNE
EXTRACTS
COLORINGS
SALAD DRESSINGS
MAYONNAISE
FRENCH DRESSING
THOUSAND ISLAND DRESSING
CREAM DESSERTS, with sugar and milk, Lemon, Chocolate, Butterscotch, Vanilla, Tapioca and Asst'd.
GELATIN DESSERTS, Orange Lemon, Lime, Strawberry Raspberry, Cherry Asst'd and Asst'd Red. Plain Unsweetened.
MALTED MILK, plain.

Constance Conover, our Director of Quantity Recipes, has developed many new recipes for delicious, low-cost dishes. Ask your Continental man for free copies of the latest assortment.

MAKERS OF CONTINENTAL'S FAMOUS "76" MENU PRODUCTS

modern GAS kitchens and bakery keep Bullard-Havens students up-to-date on the best methods of food preparation



The Bullard-Havens Technical School, Bridgeport, Connecticut

Built in 1952, this modern technical school has been preparing students for a variety of occupations. In its on-the-job training program great stress has been placed on instruction in cooking and baking for commercial, institutional and domestic purposes.

cafeteria kitchen:

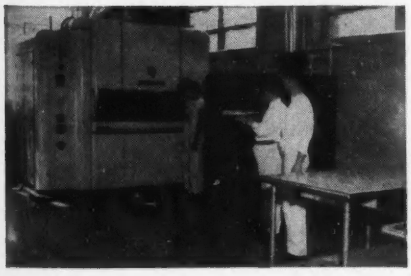
GAS Equipment includes Vulcan Ranges, Broiler, and Fryer, Blodgett Deck Oven, Groen Kettle and Market Forge Steamer

The school's kitchen doubles as training classroom for students as well as service kitchen for the cafeteria. Standard GAS Cooking Units of the types regularly used in commercial and institutional kitchens afford students every opportunity to master volume food preparation methods the modern way with GAS.

domestic science kitchens:

Equipment includes Roper Gas Ranges and Servel Gas Refrigerator

The domestic science kitchens also provide students with the best modern home economics equipment—Gas Ranges for cooking and baking, and Gas Refrigerator for food preservation.



bakery:

Equipment includes Union Flex-O-Matic Rotary Gas Oven and Blodgett Gas Deck Oven

Practical instruction in commercial and institutional baking is provided in this modern bakery with its continuous rotary oven and its multi-deck oven. These modern Gas units assure students of complete preparation for jobs in any kind of bakery.

Director John H. Hill of The Bullard-Havens Technical School sums up the whole case for GAS in his statement "We use GAS extensively and find it readily adaptable to our entire training program, in addition to being dependable and economical." Your Gas Company Representative will give you all the other facts about GAS—why not call him?

MORE AND MORE... THE TREND IS TO GAS FOR COMMERCIAL COOKING

AMERICAN GAS ASSOCIATION
420 LEXINGTON AVENUE • NEW YORK 17, NEW YORK

ternship Board are meeting February 13 in the Headquarters Office.

The *Joint Committee of A.H.A.-A.D.A.* will meet February 15 in Chicago.

The *Membership Requirements Committee*, with Esther A. Atkinson as Chairman, met in Chicago on January 23. The response to the request for comments from members on the proposed membership requirements has been very gratifying.

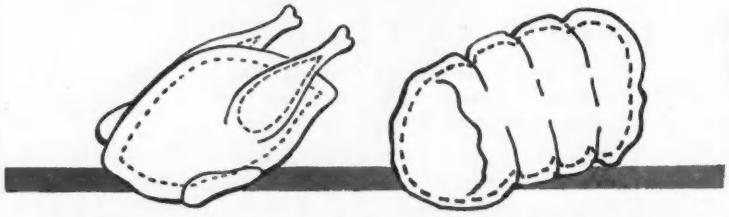
The *Library Committee* has held two meetings in the Headquarters office for the purpose of reviewing materials for the Lulu G. Graves Memorial Library. Elizabeth Tuft is Chairman of this committee.

News of Products and Services

National Canners Association announces the latest issue of "Container Sizes for Various Canned Foods," based on 1952's pack of foods. In the can-size table, a column of "Consumer Terms" has been added, gleaned from findings in newspaper and consumer advertising. This table also shows the container industry term, approximate net weight and yield in cups, and lists the products for which the various sizes are used. Other tables show percentages of fruits, juices, and vegetables canned during 1952 in popular sizes.

YOU PAY FOR GOOD MEAT-

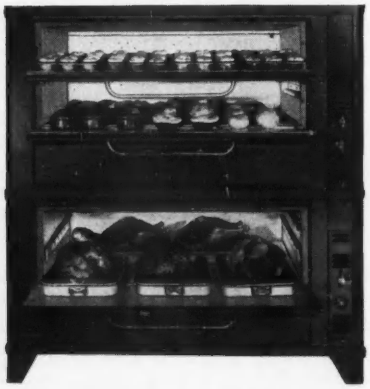
Why WASTE it?



BLODGETT ROASTING CUTS DOWN LOSS SAVES UP TO 71% ON MEAT SHRINKAGE!

You know that low-temperature roasting is the key to savings on meat shrinkage. Why run up your costs by hurrying your meats and poultry in crowded oven space not large enough for your needs? Blodgett's large hearth area (five 25–35 lb. turkeys per deck) gives you the CAPACITY you need. Blodgett's accurate thermostats give you CONTROLLED roasting. Blodgett's heavy insulation (4" fiberglass) gives you the most from your fuel.

Savings (up to 71%) on meat shrinkage alone will pay the moderate cost of a Blodgett roasting oven in a few months, and will continue to put money in your pocket year in and year out.



WRITE FOR FREE FULL COLOR FOLDER

Blodgett Ovens Cook, Bake and Roast Better *All at the same time!*

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IN CANADA, GARLAND-BLODGETT, LTD., 1272 CASTLEFIELD AVE., TORONTO 10, ONTARIO

Frozen foods are the subject of the seventh series of quantity recipes using Ac'cent, issued by *International Minerals and Chemical Corporation*. The recipes were developed, production-tested, and in all but one case (a nonfrozen dish) freezer-tested by the Institutional Service Department, Amino Products Division of the corporation. Meat, poultry, fish, and other dishes are included in the recipes, which may be separated to form file cards.

"Wyandotte Dual-Paks" are a new product of *Wyandotte Chemicals Corporation*, the square shape of which saves 40 per cent of storage space over the conventional cylindrical plywood containers. Each case contains three Dual-Paks, i.e., waterproof plastic bags inside corrugated cartons, containing 20 to 25 lb. Wyandotte Neosuds, Salute, F-100, or Steri-Chlor.

Edward Don & Company has recently introduced a new, practically unbreakable and unchippable 10-oz. water tumbler made of "Don-ite" plastic. Lighter and stronger than glass, Don-ite is a specially formulated, tough, crystal-clear plastic. When dropped, the tumblers bounce rather than break. A straight-fluted design helps to prevent scratching, thus keeping the tumblers new-looking longer. The plastic will stand washing in commercial dishwashing machines at 180°, and the tumblers conform to the requirements of all sanitary codes.

"Sugar . . . Its Types and Uses . . . Competitive Products" is the title of a thirty-page booklet recently published by *Sugar Information, Inc.* The commonly used term "sugar," i.e., sucrose, is differentiated from "sugars" in the chemical sense, and various types of sugar and the sugars are defined and described, and their uses are given. Also discussed are: methods for judging relative sweetness; chemical changes; and caloric values.

Deon James Weston has joined the staff of the New York office of the *National Dairy Council* as Program Adviser for schools within the boroughs of New York City. Mrs. Weston is a graduate of Utah State Agricultural College and completed her dietetic internship at the University of Michigan Hospital. Before joining the National Dairy Council staff, she was on various hospital and public health department staffs.

Universal Dishwashing Machinery Company has available three new, heavy-duty, immersion-type dishwashing machines. Two have a maximum capacity of 3500 pieces per hour, and the third, 2500 pieces (dishes, bowls, silver, and glasses). All tanks are deep, separate, insulated, and removable and can be supplied in galvanized or stainless steel. A combination cover and drain board slides over all tanks, and all three are filled by a swinging faucet. The water in the power wash tank and final rinse tanks can be maintained at proper operating temperatures by thermostatically controlled or manually operated steam, gas, or electric heaters. The fresh-water hose spray for scrapping and final rinse is operated by a foot pedal valve with pressure adjusting cock. Washing action is provided by a propellor type wash pump. All models

New... Kraft Table Syrup

IN INDIVIDUAL PLASTIC PC* CONTAINERS

gives perfect portion control, measured costs and convenience

Here's the answer to your syrup serving problems—the finest of maple-flavored table syrup in handy PC Pack individual airtight containers.

No more messy job of filling and maintaining syrup receptacles—no more waste of syrup. Each PC Pack contains a 1¾-oz. "just-right" serving which reaches the customer without even the slightest trace of *stickiness*.

In addition to offering perfect portion control PC Packs eliminate inventory problems—you know exactly how many servings you have on hand and can measure your costs to the penny!

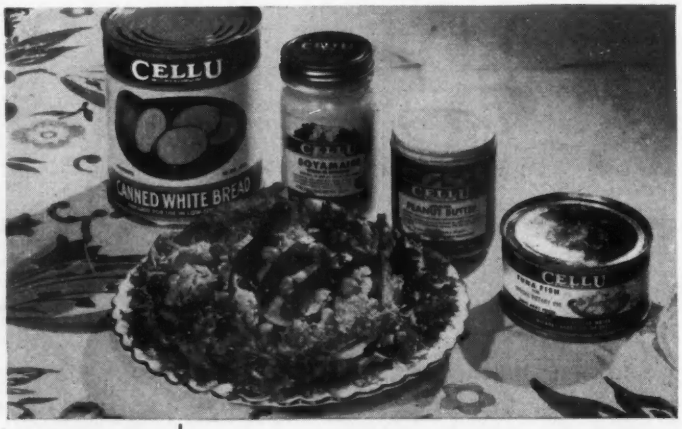
Order PC Packs of table syrup from your Kraft Institutional Representative today!

PC Pack table syrup packed in trays of 20—10 trays to box

**portion control*

KRAFT Foods Company INSTITUTIONAL DIVISION

THE NATION'S TASTE IS YOUR BEST BUYING GUIDE



Add Variety to Sodium Restricted Diets with Cellu Foods
(Unsalted)

Tomato Juice
Canned Vegetables
Strained Vegetables
Tomato-Rice Soup
Mushroom Broth
White Wheat Bread
Rice Wafers
Low-Sodium Baking Powder
Boned Chicken
Canned Salmon
Low Sodium Cake
Cellu K-Salt

Send for Literature

For Sodium Restricted Diets

CELLU UNSALTED PEANUT BUTTER—A flavorsome way to add variety to low salt diets. All the goodness of natural peanut butter without added salt. In 6 oz. jars.

CELLU SOYAMAISE (*Green Label*)—A tangy mayonnaise type dressing made from soy bean oil, eggs, vinegar, without added salt. Sodium content only 36 mg. in 100 grams.

CELLU DIETETIC TUNA—Packed in water without added salt. Sodium content 70 mg. per 100 grams of fish. 6½ oz. tins. Tuna salad pictured above made with Cellu Tuna and Cellu Soyamaise.

SODIUM RESTRICTED

CELLU *Dietary Foods*

CHICAGO DIETETIC SUPPLY HOUSE *Inc.*
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DIETETIC SCALE

The standard diet scale of the medical profession for controlled diets. Rotating dial eliminates computation as each item of food is added on the serving plate.

Capacity 500 grams by grams. Stainless steel platform, white enamel body, easy to keep clean.

Model 1411 (illustrated) has glass protected dial, price $15.00

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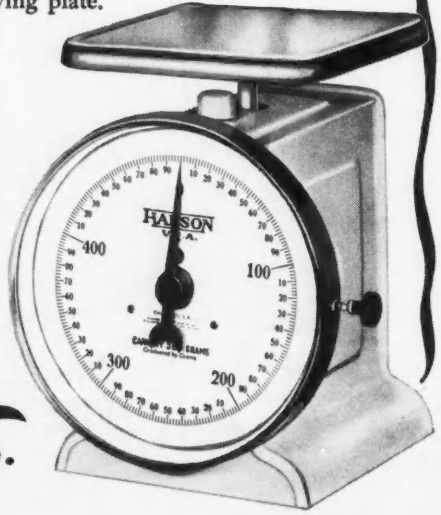

HANSON SCALE CO.
Est. 1888
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use standard plumbing fixtures and fittings with back splash that can be removed without breaking plumbers' connections.

Custom Food Products Inc. has released a new booklet, "12 Kitchen Tested Recipes," featuring quantity recipes for: baked meat loaf, chicken gumbo soup, bread dressing, brown gravy, chicken noodle soup, French onion soup, chicken soup, cream of peanut butter soup, corn chowder, beef gravy *au jus*, vegetable soup, and chicken gravy supreme. Suggestions for varying some of these recipes are given, as well as optional ingredients.

American Can Company has introduced a new oblong, sanitary style sardine can, which features a slotted key that fits into a lip on the top. The can has a drawn body with a double-seamed top, replacing the former punch-and-roll opening can. The new container supplements the company's standard sardine container. This is the first of the sanitary-type sardine cans to be manufactured in the U. S.

Metropolitan Wire Goods Corporation's new, pocket-size booklet, "Better Dishwashing," includes condensed information on the company's complete line of Sani-Stack Racks. Photographs, descriptions, and complete specifications are given for all items, both of the regular Sani-Stack line and the Sani-Stack Imperial line (with plastic linings). Also included is information on methods of reducing dish handling. New Sani-Stack racks for plastic creamers and pots are described.

Soluble coffee for bulk brewing is now finding wider use in some restaurants and other food serving establishments. The *S. Blickman* Tri-Saver urn, with its permanent filter, is claimed to be particularly adaptable for this purpose. No urn bags or filter paper are used with this type of brewing equipment. The soluble coffee is placed in the stainless steel filter and boiling water poured or siphoned over it. The brew filters into the liner below and is dispensed through the draw-off faucet. The outer jacket of the urn maintains the coffee brew at the correct serving temperature.

The *S. & R. Soda Fountain Manufacturing Company* recently introduced two new additions to its line. The first, a 4-in. refrigerated combination sandwich unit, contains ten covered pans, an electrical outlet and toaster stand over two bread drawers, and a cutting board. Also introduced was a 42- by 18-in. covered relish stand, reputed to be the only standard unit of its kind on the market. It is comprised of two sauerkraut pots with electric burners, a napkin stand, and three pots for mustard, relish, and catchup. The pots are covered with hinged sanitary thumb-grip covers for easy lifting.

Wesson Oil and Snowdrift Sales Company has made an innovation in its 5-gal. container for Wesson Oil. Called a "Poriscope," a pouring, spout-like device has been built into the top of the can. Being a tight closure, it protects the remaining contents of the can after it has once been opened. With it, oil is easier to pour without dripping.